The RCEME QUARTERLY

HORSE RECOVERY - See Page 2

Volume 2 OCTOBER, 1950 No. 4

Contents

OCTOBER 1950

OUR COVER — HORSE RECOVERY	2
PEDIGREED LUBRICANTS — by Lt W. J. Mildon	4
RCEME AT RMC — by Lt B. H. Goodings	7
TIFFIES — by Lt Col H. G. F. Morgan	9
RADAR — THE STORY OF THE MICROWAVES — by Maj H. M. Robinson	10
REME AND THE NATIONAL SERVICE SOLDIER — by Maj P. Andrews, REME	16
COTC RCEME — by O/C D. S. Campbell & H. D. Plunkett	19
THE RCEME WORKSHOP — PART 2 — by Lt H. F. Protheroe	23
CORPS ASSOCIATION — BRIG GRANT REPORTS	28
SPARE PARTS SCALING — by WOII D. S. White	30
MC OF S — by Capt F. J. Sergi	31
WHAT DO YOU KNOW? — About Supervision	38
EXERCISE PUNCHER IV	40
LETTERS TO THE EDITOR	42
BOLTS AN' ASSORTED CLIPS	44
WHO'S WHERE	46

Vol 2

No 4

RESTRICTED

The information given in this document is not to be communicated, either directly or indirectly, to the Press or to any person not authorized to receive it.

PUBLISHED BY THE
DIRECTORATE OF MECHANICAL ENGINEERING
A.H.Q. OTTAWA

OTTAWA
EDMOND CLOUTIER, C.M.G., B.A., L.PH.,
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
CONTROLLER OF STATIONERY

Our Cover

Drawn by

Capt Len Norris, RCEME Sup Reserve

HORSE RECOVERY

Reported by Capt Doyle Burleson
PRO Eastern Command.

Two slide rules, twenty-two yards of marquee-side tarpaulin, 1500 pounds of ailing horse flesh, six feet of hoarse profanity and a full squadron of well-scratched RCEME heads were mixed together, in Halifax, the other day to provide 200 Base Workshop with a recovery job, from which it will take them a long time to recover.

Out of some of these ingredients — the profanity excepted — was fashioned an equestrian type diaper using guy ropes instead of safety pins.

"This horsy bit of apparel has nothing whatever to do with the RCEME cap badge," yelled Major Bromage, OC of the workshop, "Our boys were doing a job of work in aid of local civic authorities."

"If you had FORCENE this emergency you would have had proper tools with which to finish the job," retorted an ardent kibitzer swatting May flies 'neath a nearby shade tree.

But to get back to the story .....

The hour was early. Milk bottles were askew in the gutter. Traffic was jammed at the five-way intersection of Quinpool Road and Robie St in Halifax. Service on the early morning net was poor and information was incomplete.

In the middle of this melee reposed in painful stubbornness the object of confusion. 'Plodding Josephine' a heavy milk-wagon horse (or mare) suddenly quit plodding and squatted very unladylike midst the traffic of the intersection. Despite much pleading Josephine refused to jog anymore. A local veterinary, exuding the tantalizing aroma of the stables plowed his way through the flailing arms of traffic policemen and declared old Joey had blackwater disease.

"This," said the vet, "is an affliction causing paralysis of the legs and slowing down movement of the average horse to a laydown." Old Josephine had to be removed to the vet's stables for treatment if the milk wagon was ever to roll behind her again.

Civic authorities canvassed their fire departments, garages, and One Long Wong's Laundry Delivery Service in quest of a means to move Joe gently to the horse hospital and relieve the growing traffic hazard. Results were fruitless.

At this point the plea spread to the army. Command EME entered the picture and orders went out fast to the Base Workshop boys, commanded by Major T. Bromage.

Sample order: (by teletype) RESTRICTED MORGAN TO BROMAGE STOP 1500 POUND HORSE STRETCHING RUMPWISE THREE FEET EIGHT INCHES PROVIDING TAIL IS CIRCLED BY MEASURING TAPE FOX HOLED AT 15 DEGREE ANGLE MAP REFERENCE 036124 HALIFAX COUNTY 1/25,000 STOP OP AT MR 039277 REPORTS HORSE TAIL POINTING SOU BY SOUWEST WITH EARS NOR BY NOR EAST STOP HORSE KNOCKED OUT OF ACTION BY SEVERE ONSLAUGHT BLACKWATER DISEASE STOP YOU WILL OBTAIN NECESSARY PERSONNEL PREPARE HORSE DIAPER SLING AND CARRY OUT IMMEDIATE RECOVERY STOP EXERCISE EXTREME CARE IN RECOVERY TO AVOID IRRITATION OF HORSE AND THEREBY MAKE NECESSARY REAR PARTY FOR CLEAN UP STOP ON SECOND THOUGHT TAKE SHOVELS JUST IN CASE STOP

On receipt of this order RCEME went into fast action. One breakdown vehicle, one low loader, a mixed crew of mechanics, technicians and officers (some of them also knew about mechanics) equipped with canvas, slide rules, scratched heads, spreading profanity in their wake, arrived at that very busy intersection. A sling was improvised from canvas. The horse was raised gently on the low loader and hauled unharmed to the vet's stables for treatment.

Traffic was resumed, no casualties were reported, the city and the dairy were happy and the milk wagon rolls again — behind Josephine.

Said the Command EME, shining the crest of his new Corps badge: "A horse rearing upon its hind legs is said to be 'forcene'. This old nag simply reversed the procedure. I'd say this would make him 'obscene'.

THE RCEME QUARTERLY

The information and statements herein are not to be quoted as authority for action. The Quarterly is published to assist RCEME personnel in keeping abreast of current trends and developments and to circulate interesting news about the corps.

EDITOR-IN-CHIEF . . . . . COLONEL C. R. BOEHM, MBE
EDITORS . . . . . LT COL S. STUCKEN
WOII D. C. PATERSON

ASSOCIATE EDITORS

LT COL R. F.	JOBSON, OBE	CEME WESTERN COMMAND
LT COL G. F.	BRADBURY	CEME PRAIRIE COMMAND
LT COL H. L. K.	MASON	CEME CENTRAL COMMAND
LT COL A.	MILLER	CEME QUEBEC COMMAND
LT COL H. G. F.	MORGAN	CEME EASTERN COMMAND
LT COL A. J. R.	STETHEM	CO 202 BASE WORKSHOP
LT COL E. W.	COLEMAN	CO 17 COY RCEME
LT COL J. R.	DUNLOP, OBE, ED	CO RCEME SCHOOL

EDITORIAL

It is said, of course unjustifiably, that 'Time' magazine is written for those people who cannot think for themselves, while 'Life' magazine goes a step further and is published for those who do not even wish to read. We try to leaven the more solid portions of our text with photographs. But admittedly this journal cannot profitably be glanced through in three or four minutes. We hope that readers will gain something by spending a little longer time with the magazine. If the text lacks interest and there are other subjects that you would like us to cover drop us a line direct: our address is Editor, RCEME Quarterly, Room 3102, 'C' Building, Army Headquarters, Ottawa.

It seems that the RCEME Quarterly is still not being circulated as widely as it should be. One of our editorial staff (who shall be nameless, but take your pick from the masthead above) was visiting a workshop and engaged in conversation a craftsman on the shop floor. It appeared that the craftsman had spent several weeks detailed for duty with the AWD on Sweetbriar, on which, he said, he had a most interesting time. We said: "I suppose you read the report on RCEME Sweetbriar doings in the April issue of the RCEME Quarterly." Our friend looked blank for a bit and said, "What Quarterly, sir?"

'Nuf said! The RCEME Quarterly should be read by all ranks RCEME both active and reserve. Much effort goes into the preparation of the material, both in thought and in mechanical labour, and if it is not read by all who might be concerned, then that effort is wasted, in part.

One of the hardest things for us to get right is the location of officers (WOs and S/Sgts) shown in the 'Who's Where' section in the back pages of the Quarterly. It is frequently six weeks between the time the list is made up and the time that the magazine is in the readers' hands. Sometimes our attempts at intelligent anticipation have gone astray. We must ask you to bear with us if we have shown your name or posting wrongly. Changes are taking place with a rapidity which is startling to us and which is no doubt all the more so to the people concerned.

PEDIGREED LUBRICANTS

by LIEUT W. J. MILDON, RCEME
Directorate of Vehicle Design

So you think that army engine oils are no darn good, do you? And you're sure that the army buys the cheapest oil it can get. And you probably think that oils sold under trade names in service stations are vastly superior to those we use in the army. Let me give you a few facts concerning army crankcase lubricants, which will dismiss all erroneous impressions of this kind with alacrity and despatch.

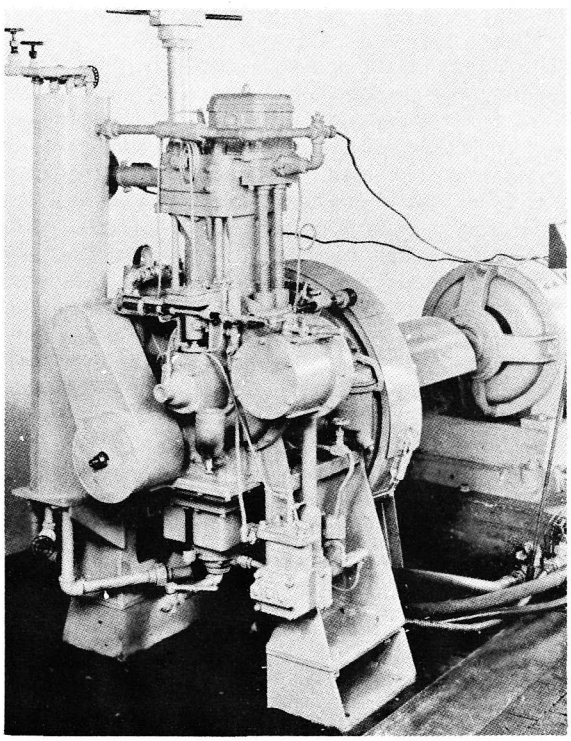
True, the army tries to get its oil at the lowest possible price through tenders. But so do all large fleet owners. If YOU wanted to buy something, and saw the same article in two stores at different prices, you'd purchase the cheaper one, because it would do the same job for less money. The army goes shopping in the same way. It procures the best lubricant at the lowest price, and to make sure that the oil selected will do the job expected of it, the army has laid down rigid standards which the oil must meet before the producer can submit a tender on a contract.

These standards or specifications are extremely difficult to meet; only the best oils can qualify. The qualification tests that these oils must pass are conducted on expensive, special machinery which duplicates the behaviour of the oils in actual use in your vehicle. These special equipments are nowhere to be found in Canada, and all oil refineries in this country who wish to sell lubricants to the Government, must send samples to the Armour Research Foundation in Chicago which has all the necessary equipment.

At this institute, the oil blends from the refiners are subjected to the five following qualification tests which are specified in the army crankcase oils 3-GP-345, 3-GP-365, and 3-GP-395, and in the American equivalent on which our specifications are based, US 2-104B.

1. A 480-hour endurance test in a single-cylinder Caterpillar diesel engine for ring sticking, liner wear, and piston deposits.
2. An accelerated run-in and high load test of about three hours, using the above mentioned engine with special modifications to check the ability of the lubricant to prevent scuffing under these conditions.
3. A 120-hour high temperature oil stability and bearing corrosion test on a four-cylinder 37 bhp Caterpillar diesel unit.
4. A 36-hour accelerated test in a Chevrolet six cylinder gasoline engine for resistance to oxidation, bearing corrosion, and piston lacquering.
5. A 500-hour full load test in a GM series 71 multi-cylinder two stroke diesel engine.

In each of the above tests all affected parts such as cylinder liners, pistons, rings, valves and bearings are new and none is used for more than one test. A lubricant which has passed in all five tests is regarded as continuing to meet the specification so long as the supplier is able to guarantee that the base oil and the additives are identical with those composing the blend submitted for trial. He is then placed on the



Single cylinder Caterpillar Diesel test engine

list of approved suppliers and no further qualification tests are required.

By the time just one test is completed and paid for, no matter what the result, the refiner is out about $5,000. If the high cost of these tests if not enough to scare oil companies from selling inferior products to the army, the rigidity of the tests themselves usually are.

But this is not the end of the story. Just because the oil met the qualification tests is no reason for the supplier to rest on his laurels. No sir! Every batch of oil purchased by the army is further sampled at the point of delivery, and immediately forwarded to the Liquid Fuels and Lubricants Laboratory of the National Research Council in Ottawa or other recognized testing establishments for inspection tests. These are not so expensive, stringent, or exhaustive as the qualification tests, but are sufficient to indicate that the oil is of the same blend which originally qualified. This continual testing ensures that a satisfactory oil is obtained at all times.

But, if it doesn't pass, the whole batch is rejected, and if sufficient rejections occur with the same supplier, that company is struck off the list of suppliers for that type of oil, and must requalify via the expensive route.

These standards, specifications and tests for Canadian Army engine oils are set up by a large group of experienced, skilled experts who have unlimited facilities for research and trials. This group, known as the Canadian Government Standards Board Committee on Petroleum and Associated Products, is headed by the National Research Council. Included in this group are refinery representatives who not only assist in the formulation of the specifications but also proffer their expert advice regarding difficulties of production, availability, and cost of the proposed lubricants. I'm afraid the so-called expert in the field who judges the quality of an oil by rubbing it between his fingers, is no match for these experts.

If these engine lubricants are used according to the instructions laid down in lubrication charts and elsewhere, no difficulties should arise. Occasionally reports are received of engine oil discoloring very quickly and in many instances the operators jump to the conclusion that there is something wrong with the engine or the oil. They usually end up by denouncing the oil as 'no darn good'. This rapid discoloration of engine oil is not a fault of the engine; it is an inherent characteristic of oils containing detergent additives. In other words the oil is doing the job it is supposed to do. At what time would the most harmful effect take place: when dirt, sludge, and products of combustion are allowed to deposit on pistons, cylinders, rings, and bearings; or when they are kept in a fine suspension in the oil, circulating, and keeping the moving parts clean and free from corrosion-inducing sludges? I'm sure you will agree that the former is the more reasonable answer.

If oil samples taken from engines experiencing this rapid discoloration of oil are allowed to stand a while, there will be a greyish deposit in the bottom of the container. These are lead salts which are included in the products of combustion with leaded fuels and, depending on the base stock of the oil, their presence can turn the oil grey, black or brown. However, testing the sample by centrifuging and making a percentage by weight analysis will show the amount of lead salts to be very small, and if kept in suspension in the oil (as they are with army engine oils) their effects are negligible. An actual sample from a severe case of grey discoloration showed only 0.32 of 1% lead, or 3 parts in 1000 by weight. These compounds are not abrasive and are in no way harmful.

"the so-called expert in the field"

The superior qualities of army heavy duty oils over straight mineral oils are obtained by blending chemical additives in the finished engine oil. It may be worthwhile to mention here the type of additives used and what they do to improve the characteristics of these oils.

Detergency additives, which have already been mentioned, prevent the formation of acid, varnish, and sludge deposits in new or clean

engines, and clean or dissolve deposits previously formed through the use of straight mineral oil. This cleaning action dissolves the varnish or gums which act as carbon binders, and carries them in suspension in the oil. The large particles of carbon and sludge are removed by the oil filter or cleaner, while the fine are carried in suspension and are too small to cause any harm. Detergency also enables the heavy duty engine oils to carry in suspension fuel blow-by and oil oxidation products which might eventually result in engine deposits. This is why heavy duty oils usually turn black the first few hours of operation.

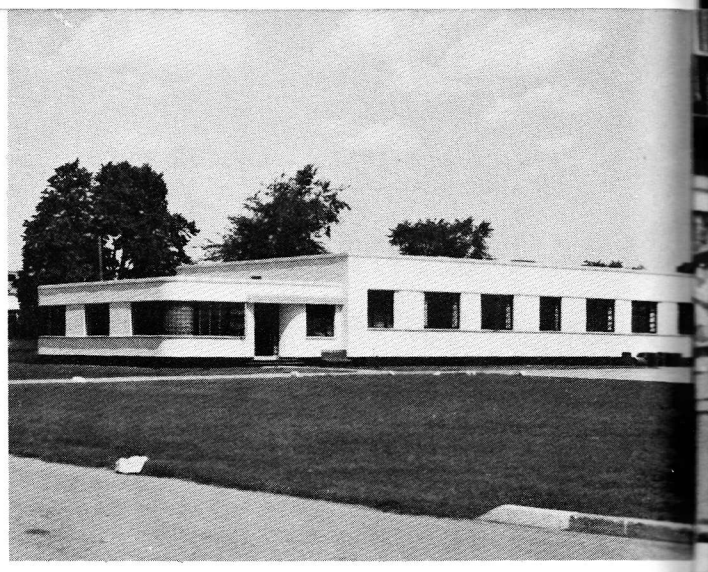
Oxidation inhibitors are additives which retard the rate of oxidation of the oil making it last longer in service. When the oil finally does become oxidized, the additive renders the oxidation products less corrosive to bearing metals.

Pour-point depressants are additives used only in certain instances where the oil is required to function at extremely low temperatures. Waxes in oils crystallize at low temperatures increasing the viscosity of the oil, hindering oil pumpability, and starving the bearings. In extreme cases the waxes are deposited in oil lines and block flow completely, thus leading to engine seizure. The pour-point depressants keep the waxy constituents in solution, and hence lower the temperature at which the oil is effective.

Anti-foam additives are used to ensure a film of oil, not a mixture of air and oil, between metal parts. Due to the high speed of moving parts, air is 'churned' into the oil, causing foam. A film of oil is a much better lubricant than a film of air. It is unfortunate indeed that heavy duty oils, because of their property-improving additive content, are more susceptible to foaming than straight mineral oils. However, the inclusion of this anti-foam additive takes care of that.

Anti-wear additives in an oil give it extreme pressure qualities, which ensure that under heavy loads, the oil is not squeezed out from between moving parts. This results in good lubrication, prevents scuffing, and gives longer life to parts.

Another additive frequently found in oils is the viscosity index improver. The viscosity index of an oil is a number which indicates the ability of the oil to resist a change in its viscosity with a change in temperature. An oil may be a satisfactory lubricant at operating temperatures of 130°F but at 200°F the oil may be too thin to give the correct film thickness. Similarly, at low temperatures, the oil may be too viscous for the oil pump. Now if one oil is required to serve over a range of temperatures, such an additive is included to give a satisfactory viscosity in all cases. The higher the viscosity index, the better is its temperature-viscosity relationship.



Fuels and Lubricants Laboratory NRC

We have been discussing the ingredients and the meticulous care which the chefs have put into the preparation and sampling of their recipes for army engine oils. Let us now consider how their cooking has affected the palates of the consumers, namely you.

Every day you see advertisements and posters put out by the oil companies stating that their product is greatly improved, keeps the engine cleaner, reduces wear considerably more, and lasts longer. But if you ask yourself what actual benefits you have received from these improved oils, you will come up with some startling answers. If these oils are so vastly improved over those of ten years ago, as the refineries claim, you would expect your oil to last considerably longer. But the oil companies still recommend now, as they did ten years ago, to change your oil every 1000 miles, even with all their improvements.

The US Army and the Canadian Army have done, and are doing, extensive tests into the useful life of their engine lubricants. From all reports don't be too surprised if, very shortly, you see in army lubrication charts and guides, an instruction to the effect that engine oils will be changed say every four or five thousand miles, rather than at one thousand. Therefore it seems that what is claimed by the oil companies is true, and that oils are considerably improved, but they will not go whole hog and admit that longer intervals between oil changes are possible. The reason for this is obvious. Why should they cut their own throats and have their sales reduced by 50 to 86%? Now, if the army is considering increasing their oil change intervals so greatly with their present engine oils, it further strengthens the argument that these are the best oils that the army can get

(continued on page 29)

RCEME at RMC

by LIEUT B.H. GOODINGS, RCEME

Royal Military College, Kingston, was the scene of much activity on Sunday 18th June. Shortly after noon, station wagons, taxis and private cars began to deliver the 122 officers scheduled to begin the Common to All Arms Course the next day.

Not the least significant amongst these officers were 35 lieutenants from RCEME installations all across Canada. Every corps was represented in this cross-section of the Canadian Army. Infantry, Armoured, Artillery and Engineers were mingling with Service Corps, Ordnance, Dentals, Medicals, Signals and RCEME. The result was one that happens too infrequently in this army. Everyone began to understand the problems of the next fellow, and to appreciate his purpose in the army. Co-operation became not a word, but a symbol of unity.

Our purpose in this course was to learn as much about the army in the seven weeks allotted as could possibly be learned. The first day work began, and only on the last day did work cease. Every corps was dissected in its turn, the parts examined, discussed and argued. No one was an expert, but the directing staff kept a firm guiding hand throughout.

First it was necessary to consider the Infantry. What is the organization of an Infantry division? An Infantry brigade? An Infantry battalion? An Infantry company? A platoon of Infantry? All these questions were answerable and more. Then it was time to move on to the Armoured Corps. RCEME had its turn along with RCOC, RCASC and the rest. Capt C.G. Provan, the RCEME representative on the directing staff worked long hours to ensure that no important point should be missed.

Then came visits to the Royal Canadian School of Signals and to the RCEME School. Sigs did a good job in showing off their school, but we thought (and we are no doubt prejudiced) they did not compare with the effort put forth by Lt Col Dunlop and the staff at the RCEME School. The DME accompanied by Lt Col Ramsay visited RMC in the morning. His address was well timed to introduce RCEME before the tour of the RCEME School in the afternoon.

Everything ran like clockwork Armament,

The CGS, Lt Gen C. Foulkes, CB, CBE, DSO, is shown in these Army photos of the final inspection of the course. RCEME lieutenants completing the course may be seen in both pictures.

Artisan, Electronics and Vehicle Companies were thrown open, and the instructors did their very best to answer all questions. The tour was climaxed by a demonstration of the assembly of a jeep from parts, in three minutes forty seconds.

It was a day for RCEME, and it suddenly became clear to a lot of people that there really was a good reason why the army had these RCEME types around.

Back at work again after the tours, two weeks were spent on tactical exercises without troops. Here again RCEME did not take a back seat. After tackling the problems that come up every day in a workshop, it wasn't too difficult to match wits with tacticians.

The course came to a fitting climax when the CGS, Lt Gen Foulkes, honoured us with his presence for an inspection and closing address. And, after the parade, RSM Coggins, doughty drill instructor at RMC, paid the course his highest compliment when he announced, "Gentlemen, it could have been worse!"

/It has been ruled by CGS that all officers, the first summer following qualification from Corps' Schools, shall attend a three month C-to-A-A Course at RMC. Lieut Goodings along with 34 other RCEME officers attended the course this year. —Editor/

RCEME AND THE CASF

By the time this magazine reaches our readers' hands, our information may be quite out of date. However, at the time of writing RCEME participation in the Canadian Army Special Force was as follows, the appointments still being subject to confirmation by the appropriate authorities:

DADME - Major A.H.R. Lewis
191 Cdn Inf Wksp - RCEME
A/OC - Capt R.E. Hallam
also Capts C.H. Betts, E.W. Cole, E.F. Hendricks, Lieuts H.F. Fleming, J. Peters
192 Cdn LAD (B) RCEME
OC - Capt H.E. McLaughlin
193 Cdn LAD (B) RCEME
OC - Capt R.C. Rivers
Attached to 'A' Sqn 1/2 Cdn Armd Regt RCAC - Lieut B. Deibert
with 25 Cdn Rft Gp - Lieut W.M. James

Establishment action is also in process for 25 Cdn Support Workshop RCEME, which has been designed to effect 3rd and 4th Echelon repairs to Canadian equipments where US Army facilities do not exist or are inadequate. It will also provide equipment recovery facilities, and port facilities, for depreservation and repair of replacement Canadian equipments. Its structure provides for employment of up to 120 civilians if the extra production should be required.

Its proposed location has not yet been disclosed.

The composition of the Infantry Workshop and of the LAD's will be in accordance with current establishment figures.

In addition RCEME contributed substantially to the administrative party detailed to take charge of the Canadian Army Staging Camp at Fort Lewis, Washington. Colonel C.R. Boehm, MBE, was appointed Commandant, and Lt Col R.H. Ramsay, AA&QMG; Major W.A. Campbell, SSM H.A. Popkin and Sgt E.C. Price also left with him.

RCEME were heavily committed in the weeks prior to the move to the port of embarkation. 202 Base Workshop, Montreal, 204 Base Workshop, London and 214 Base Workshop, Vancouver all played their part in preparing the thousand different items with which a Brigade fights and moves.

The RCEME School had the task of mothering the new RCEME units as well as assessing and training all RCEME for the force, plus the electrical and mechanical tradesmen belonging to RCAC, RCA and RCASC.

"Tiffies"

by LT COL H. G. F. MORGAN, MBE, RCEME

/At the present time there are 372 artificers in the Canadian Army. In 1938 there were some 40 armament artificers.

It is of interest to compare the present system of training artificers which is commonplace to us now, with the system in force before the Second World War.

In view of this we asked Lt Col H.G.F. Morgan, himself a pre-war 'tiffy', to describe the method by which armament artificers were obtained for the RCOC (Armament Section) prior to August 1939.

Lt Col Morgan includes in his remarks some views of his own as to the way in which the old system might with advantage be integrated with the present one.—Editors/

Prior to August 1939 at least one armament artificer was enlisted every three to five years whether or not there was a vacancy open for one in the Permanent Force. The following were some of the requirements to be met:

(a) The candidate was to be physically fit.

(b) He should have sufficient academic standing, which averaged out about Grade 10.

(c) He was to be a time-served journeyman from a recognized engineering firm, and able to produce a certificate showing that he had served four or five years apprenticeship depending on the Province from which he came.

(d) He had to have at least three references of character from responsible persons of his community.

(e) On completion of his Military College of Science Course (sixteen months duration) he was to agree to serve two three-year enlistment periods on his return to Canada.

(f) The candidate was given a trade test embodying the metals' trades, blue print reading, turning, fitting, and some welding and blacksmithing. An elementary knowledge of IC engines was an advantage. This trade test was the most important factor, as it weeded out nine of every ten applicants.

If the candidate came up to the above standards, he was enlisted as a private one day, and the next day issued his kit etc, and shown in orders to be S/Sgt on probation. He was awarded twenty-five cents per day trades pay. The top rate, on qualification at Woolwich, was forty cents. The candidate was then sent off, in most cases, to the nearest infantry regiment, where he was taught to carry himself as a soldier. The length of time he spent there was at the discretion of the OC infantry company. On return to his unit, the candidate was generally teamed up with another armament artificer so that he could begin learning military equipments and applying his skill of trade to them. He did not, as at present in RCEME, continue to learn his trade.

This probationary period went on for a period of up to five years, and then the armament artificer, still on probation, would be due for the Military College of Science Armament Artificer Course. The practice of having to be shown as 'on probation before proceeding to Woolwich was due to a candidate who was low in skill of trade and academic knowledge almost failing the course. This happened in 1930 and between that date and 1939 the above system was in effect. (It might be pointed out here that most of the armament artificers just pre-war were quite a bit older than I was, as the OME at the time liked to enlist tradesmen from

(Continued on Page 41

RADAR

- the story of the microwaves

by MAJOR H. M. ROBINSON, RCEME

RADAR....."radio detection and ranging". The history of the development of radar is one interesting illustration of the teamwork required on any major technical development. The theoretical scientist, the research scientist and the engineer all played important roles in the development of radar. Engineers and technicians may feel proud of their part in converting ideas and models into production units in an amazingly short time.

Two fundamental concepts of radio waves were established by Hertz in 1866: that radio waves can be formed into beams, and can be reflected. This discovery is the beginning of the radar story but, like many other famous discoveries, many years were to pass before the value of the discovery was understood or technology sufficiently advanced to make use of the information.

From 1886 to 1920 there was progress in wireless communication research but very little thought was given to radio detection. It is recorded that a German engineer in 1904 was granted a patent on a way of using this property (of Hertz) as an obstacle detector for ships. It is also of interest to note that in 1897 Lord Raleigh expounded a theory of transmission of electrical energy in hollow tubes and submitted a mathematical treatise to support the theory. This work was the basis of the supposedly new idea of waveguides which is part of most modern radar and which was first used in a field equipment in 1944.

Kennelly and Heaviside, independently but almost simultaneously, in 1902 suggested the existence of the ionosphere (sometimes referred to as the Kennelly or Heaviside layers). This theory resulted from observations of radio waves. It was considered that if all air was similar to that near the surface of the earth radio waves would pass out into space and could not circle the globe. These men concluded that there must be a layer of air encircling the globe which was a conductor and could therefore effect the reflection of radio waves. This theory led to tests, in the 1920s, by various countries to determine proof of the presence of the ionosphere.

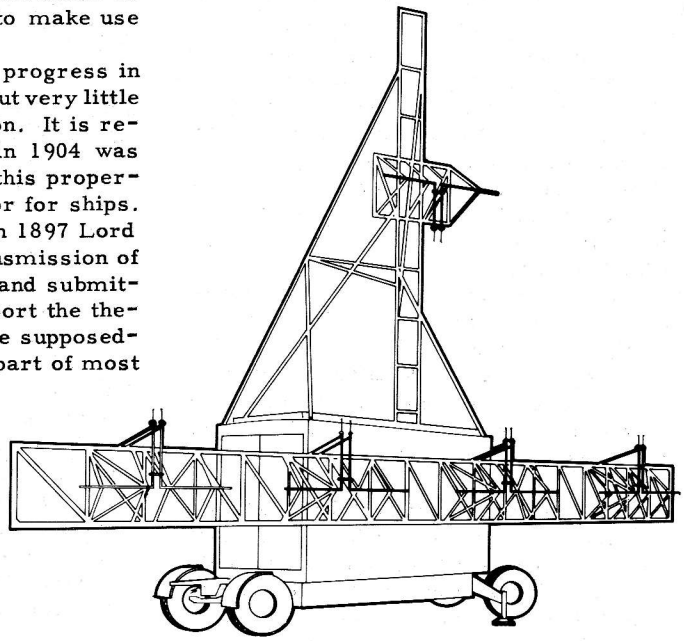


Fig 1

An early radar of about 1940 manufacture, prior to the introduction of microwave technique. The AA No. 1 Mk II transmitter shown had a range of 55 to 85 megacycles. This illustrates the type of antenna used then as compared with the paraboloid reflectors or waveguide array fitted to present day microwave sets of approximately 3000 megacycles.

Successful tests had been carried out in both Britain and USA by 1926. Scientists of many countries speculated on the use of 'radio detection' during the 1920s. First the interference of a ship passing between two others in radio communication was noted and by 1930 experimenters had noted that radio reflections could be obtained from aircraft. During the period 1915 to 1925 work had been carried out on sound detectors and infra red detectors, but little progress had been made on radio detectors mainly because of the many unsolved technical problems, as radio was still in its infancy. In 1925 the US had made an important step forward when the Carnegie Institute was successful in measuring the distance to the ionosphere by means of pulse ranging which is now used in modern radars.

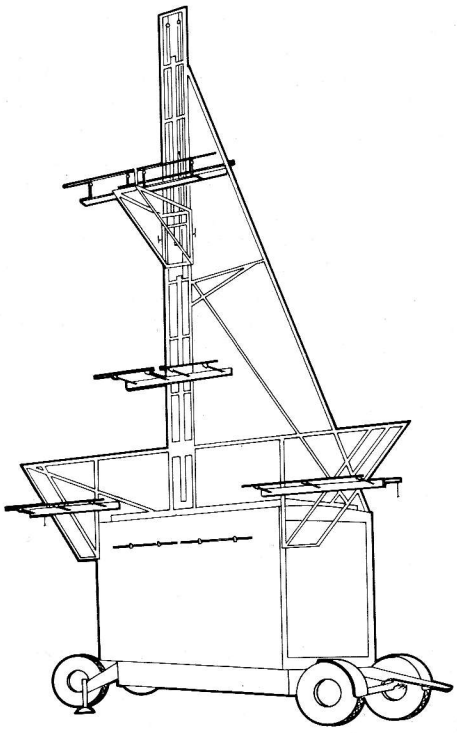


Fig 2

The AA No. 1 Mk II (Receiver) shown is complementary to the transmitter in Fig 1. The entire cab was rotated by hand. Accuracy for bearing was $\pm 1/2^{o}$, and for elevation $\pm 1^{o}$ to $\pm 10^{o}$ (at 50^{o} angle of sight) compared with accuracies of $\pm$ 10 minutes for both bearing and elevation of modern sets

Pulse ranging is the system whereby a short pulse of energy a few microseconds in length is transmitted, the transmitter is cut off and the elapsed time for the reflected signal to reach the receiver is measured. This pulse ranging principle was not used in any detection trials until some time later because of the difficulties involved in using this method when the receiver and transmitter are in close proximity. The transmitter pulse would block or overload the receiver and the return signal would reach the equipment before the receiver had recovered from the transmitted pulse. In most cases the receiver would be rendered inoperative.

There was also the problem of producing a device which would provide bearing and angle of sight. In the case of the ionosphere trials an antenna was used with a reflector which would direct the wave in a vertical direction but the accuracy required of this beam was small compared vith that required for aircraft location.

The experiments carried out in the 1920s and early 30s were using equipments in the frequency range of short wave radio, the 'ham' band area. Microwaves, wavelengths less than 1 metre, or, frequencies above 300 megacycles, were mostly a matter of speculation. Transmitters were made in the early thirties at the edge of the so-called microwave band but these were of low power only. Increasing efforts were made by all countries to produce a satisfactory microwave unit because it is a property of radio waves that the minimum possible beam width is proportional to the wavelength. The shortwave length of the higher frequencies meant narrower beams, more accuracy in bearing, better definition, smaller antenna, higher gain in the antenna and ability to detect aircraft at lower angles of sight.

The race to be the first to produce a satisfactory microwave equipment was started in the middle thirties by many countries, resulting in better equipments in the very shortwave band but no successful units in the microwave band. This was not to come until 1940.

Many methods of detecting aircraft and ships were tried out in the early thirties. The US Naval Research Laboratory in 1930 used a 'beat method'. This consisted of two widely separated stations, one transmitting, the other receiving. The system made use of continuous waves and detected moving aircraft by the interference of the ground wave with the sky wave reflected from the aircraft. If the aircraft were still, there would be no beat from the wave interference at the receiver but when the aircraft is moving the time for the reflected wave to reach the receiver is changing and so the wave may arrive in or out of phase and so

strengthen or reduce the strength of the ground signal. There were many defects in this procedure but it is mentioned because it was the beginning of a period of research supported by the US Services.

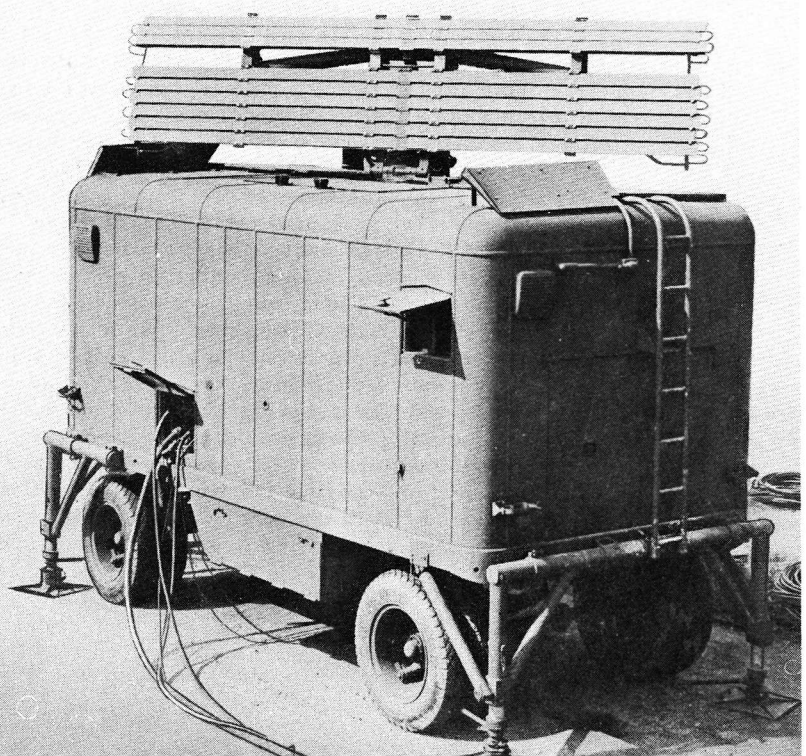
The British after a demonstration by the Post Office in 1931 started an accelerated research program and by 1935 the National Physical Laboratory staged a successful demonstration of a pulse ranging radar. As a result an order was placed for five units in the fall of 1935. This equipment measured range to one mile, bearing to 1 1/2 degrees at 60 miles range, and worked on a wavelength of 50 meters (6 megacycles).

The period from 1935 to 1940 was one of intense activity by all countries. In Britain 15 more stations were authorized in 1937 (wavelength 10 meters and angle of sight to 1/4 degree) and were in operation by the time of Munich and by March 1939 there was a chain of stations throughout the isle. This amazing progress of the British prior to Munich, in face of the adverse political conditions of 1935, was largely due to a physicist with the National Physical Laboratory, Sir Robert Watson-Watt. Sir Robert had been experimenting with ionosphere measurements and in 1935, after reflections on the work of the Carnegie Institute on pulse ranging, he submitted to the committee for the Scientific Survey of Air Defence, a program for the installation of warning radars on the coast of England. At the same time he had developed a radar for a demonstration, and to climax his efforts was able to persuade the government, a government which had a policy of low defence expenditures, to spend 5 million pounds on a radar network. A remarkable achievement, indeed!

As soon as the radar early warning stations were well on their way, some efforts were diverted to an ASV (air to surface vessel) radar for use by the RAF coastal command. A prototype (in 1938) had a range accuracy of 100 yards up to 9 miles, working at 11 meters. This radar was first placed in use in 1939, but it was not until 1941-42 that an equipment using a higher frequency was able to detect surfaced U-boats at any appreciable distance.

In 1942, prior to the introduction of new equipment in the microwave band, U-boats were able to detect radar transmission and submerge. With the introduction of the microwave 'H2S' unit the Germans were completely baffled as they had no microwave receivers and tried all sorts of countermeasures. It was not until much later, six months after the capture of a British equipment, that they knew the answer; a credit to British security.

Work had also started in 1939 on an interceptor radar for use in fighter aircraft. This proved quite useful in the Battle of Britain in spite of its limitations. The RAF used an excellent procedure of interception which was developed and proven in the early days of the war. Although the planning for this defence system was not initiated until early in 1938, some of the equipment used was under development prior to this date. The interceptors used the ground stations for guidance until quite near the target and employed what was then an extremely shortwave wireless control equip-



Tactical Control Radar equipped with waveguide antenna array for microwave transmission.

ment.

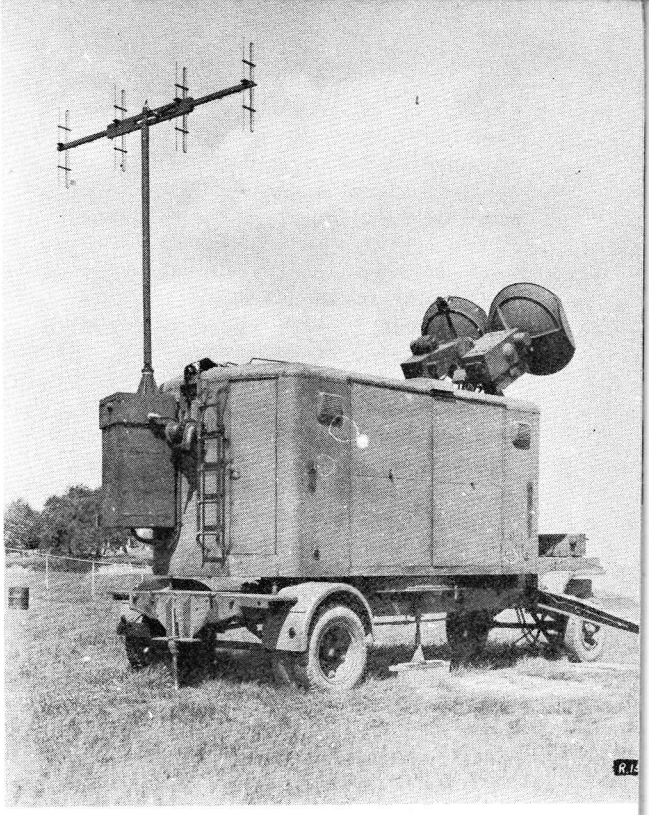
A new device called IFF (identify friend from foe) provided almost immediate identification of friendly aircraft and thus avoided unnecessary interceptions. This IFF device was proposed in 1936 by Watson-Watt who visualized a receiver in the aircraft automatically operating a pulse transmitter emitting coded pulses. A successful production unit was available in 1939. This elaborate interception procedure greatly disturbed the enemy and in all his efforts to avoid detection (which included night attacks) he failed to notice that a low flying aircraft could approach close in before being detected. In the confusion the enemy did not fully appreciate this factor until after he had lost the Battle of Britain.

In 1939 the first 'split beam' radar was produced which operated at 1 1/2 meters (200 mc) with a bearing accuracy of 10 min. This radar was in use for the later stage of the Battle of Britain and prevented the enemy from approaching undetected except at very low levels.

Anti-aircraft radar was under consideration in 1937 and a prototype of the GL Mk I was designed to be an adjunct to optical fire control with an accuracy of approximately 25 yards, bearing to one degree and a rough angle of sight. Although of much shorter range than the coast sets it gave an early warning and approximate bearing on which optical instruments could search. This radar was placed in production late in 1938 and was in the field by the end of 1939. It was considered obsolete when production started but designing of the GL Mk II was not sufficiently advanced for immediate production. Production was therefore continued and a major modification initiated in 1940 made it the GL Mk I* which included the split beam principle of the GL Mk II. The GL Mk II reached the field in 1941.

The split beam technique was a procedure whereby the signal from the antenna was split into two slightly divergent but overlapping beams and the strength of the reflected signal from each beam compared. An aircraft in a position where the beams overlap will give equal signals; an aircraft on either side will give a weak signal to the opposite beam.

The split beam of the GL Mk II was accomplished by the use of two vertical and horizontal antennae. The vertical antennae indicated height of the aircraft while the horizontal antennae indicated the bearing. This method of split beam was later to be simplified and reduced in size by the use of an offset rotating antenna which received signals in each of the four quadrants by means of a selected switching device. The relative strengths of the signals from each quadrant could be compared



Present day Fire Control Microwave Radar incorporating parabolic reflectors and target identification equipment.

In reviewing the 1935-40 period we see radars being developed in various countries with Britain in the lead in actual installations and the US somewhat behind in installations but parallel, or nearly so, in research. The 1937 radars operating at 6 mcs and the 1939 radars (200 mcs) were deficient in the antennae system for the reasons mentioned above and therefore the British, who had considered centimetric radar (microwaves) since 1935, in 1939 decided the problem must be solved. To this end a research team at the University of Birmingham was directed in Nov to concentrate on the design of a satisfactory microwave transmitting tube.

In the summer of 1940 Professor Oliphant of the University presented to the Defence Committee an amazingly small tube which was called a 'cavity magnetron'. This was in effect the first workable microwave transmitting tube. It is interesting to note that while the British physicists realized the importance of this development and made instant use of it the Germans, who had earlier patented such a device, did not attach any importance to it and only realized their error very much later. The Japanese had also worked prior to 1940 to produce a magnetron but with little success.

The US in July of 1940 set up a microwave

committee to explore the possibility of using microwaves in radio detection, a problem which to US research at that time) appeared speculative in the extreme since no source of power at that wavelength was known to them as they were unaware of Prof Oliphant's development of the magnetron. It would seem that Britain under pressure of impending invasion had realized that microwaves were vital to their defence, and were actually nearing the solution of the problem, at the time when the US were only just considering the use of such frequencies.

There were other developments in Britain worthy of note during this period. In 1935 the PPI (plan position indicator) was outlined on paper, although a model was not produced until 1940. The PPI indication of a target is a method whereby an electronic linear range scale is rotated about its zero at the centre of a cathode ray tube. This range scale is synchronized with the antenna and by means of brightness modulation a signal caused by an aircraft produces a spot of light on the face of the tube which indicates both the range and the bearing of the target.

In 1938 the first ship-borne radar was produced, as a result of observing that shell splashes would provide a radar echo. This was of tremendous interest to the Navy because of its value in target ranging and added considerable impetus to the naval radar programme.

Italy had produced a common transmitting and receiving aerial system for pulse ionosphere ranging and this system was used in British radar in late 1939.

The visit of the British technical mission to the US in Sep 1940, headed by Sir Henry Tizard, opened a new era in radar. During the period 1936 to 1940 — particularly from 1938 on — the scientists were widening the radar horizons almost daily; new or improved procedures, new mechanisms or entirely new equipments were being proposed at such a rate that the laboratories could not produce experimental models of them all. By 1940 the science had reached a sufficiently high level that the scientists could visualize, in general, the microwave equipment.

Between the British and the US research experts many of the microwave problems were solved and others were the subject of considerable research. This prior research partially accounts for the swift progress to follow, but in no way detracts from the credit due the Radiation Laboratory at the Massachussets Institute of Technology and the Bell Laboratories. In Nov 1940 the MIT Radiation Laboratory was organized; in Jan 1941 the first echoes were received. In May 1941 a prototype of an interceptor radar was turned over to industry for production. In six months an entirely new and different radar had been designed, developed and a prototype constructed.

A high priority was assigned to the work of this laboratory. This is evident from the fact that the co-ordinator was able to recruit physicists and engineers from universities and industry so rapidly that by the fall of 1941 the staff had expanded to 4,000. This group along with industry were soon to be producing radars for all services. In some cases the equipment was turned over to industry without a prototype, just a 'bread board' model with overall dimensions being supplied. The engineers of industry introduced many of the modifications and improvements in design.

Canadian radar activity was initiated in 1939 when a team from the National Research Council visited England, but concentrated effort did not start until after the visit of the British Mission in 1940. It was decided that at first Canada would concentrate on efforts to produce an AA radar and the ASV, some 3000 of these latter being supplied to allied nations. The Canadian radar effort, bearing in mind our previous electronic experience, may be said to have been equal to, or exceeded, that of the US. The radio industry in Canada was mainly a production line of US designs and Canadian electronic engineers had, unfortunately, little opportunity to demonstrate their initiative and ability.

The design of the AA radar was begun in Sep 1940 and in Jun the first model was demonstrated, the second being sent to the UK shortly afterwards. The bill of lading read '2 trailers, 3 trucks, 1 generator, 5 scientists'. The first production unit was finished in Jun 1942. (The ASV equipment was shipped from production in Sep 1941.)

The buildings for the production of this equipment were started in 1941 and as soon as the concrete floor was poured, engineers started to set up the production lines. Engineers and technicians came from all across the country to Research Enterprises Ltd which soon was to employ 6000 people. Experienced administrative men directed the organization, but the large staff of engineers and research men were relative juniors, in many cases fresh from university. It is a credit to our universities that the equipment proved so good.

There soon were many critics pointing out the deficiencies of the unit; they were correct. The defects were there, but at that time Britain urgently needed 10 cm radars and neither their own nor the US production was ready. Many defects were not remedied, in order that production would not be delayed. It should be noted that the accuracy of the equipment was not bettered until late in the war The major difficul-

ties arose from a rotating cabin, but the design of a high power, high frequency rotating coupling was not available from the US until after production was ready to start. The resultant change would have meant a completely new design and would have delayed production several months.

Another of the main problems in the production of microwave radar was the difficulty of producing a satisfactory transmitting line from the high power oscillator to the antenna. The first 10 cm radars used concentric lines with polysterene spacers between the inner and outer line, in other words a rod spaced in the centre of a cylinder. Considerable trouble was experienced with arcing at rotating joints and at the spacers. There was also considerable attenuation in the line. The problem was solved by the development of wave guides of simple construction and of almost no attenuation.

However, one of the reasons why wave guides were not introduced on the first equipments was the lack of a satisfactory high power rotating coupling for wave guide use. This problem in turn was solved by use of a rotating 'choke' coupling in circular wave guides and by a 'door knob' coupling in rectangular guides. There are now many variations of these coupling methods which make use of capacity and choke coupling or both, and result in the elimination of arcing and almost no mechanical wear.

The first automatic following set was on trial in 1941, although this device was still to require considerable improvement and was not introduced to the field in any quantity until late 1943 and early 1944. The final version of AA radar produced by VE Day searched for the aircraft and upon locating the target 'locked' on to it with a 'pencil' beam and without further assistance directed the gun to the proper firing position.

The war years saw many new types of centimeter radar produced for various user requirements. Cathode ray tubes were improved, the type of presentation improved, weight reduced, higher power obtained, and so on. The 'dark horse' of 1938 was now occupying a major place in the electronic industry and the rapid growth of television in the USA is undoubtedly the result of improvement of materials and techniques in the development of radar.

This RCEME badge and shield is the work of Cpl L.H. Lewis, Cfn R.J. Hall, L/Cpl Fawson, Mr. Tom Roney and Spr R.E. Burton, of 212 Wksp RCEME, Shilo Manitoba.

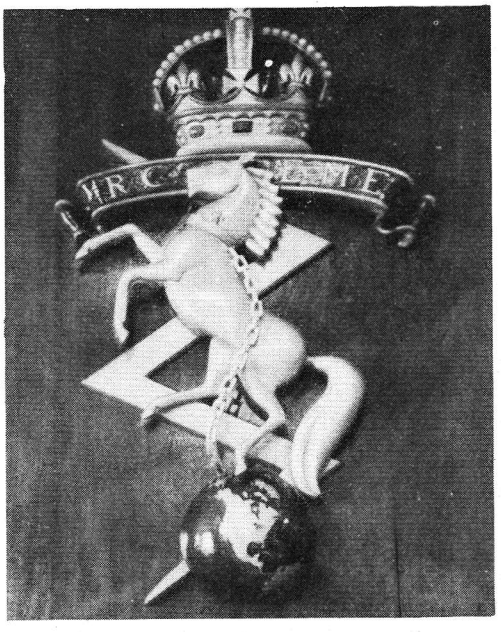
The badge measures 36 inches overall in length and 21 inches in width at its widest part. The shield is 50 inches long and 34 inches wide.

First steps in the production of the badge were instigated when rumors were rampant that we were going to adopt a badge similiar to the REME.

A REME cap badge was photographed by Cpl Lewis who ingeniously improvised a means of projecting this onto a sheet of drawing paper on a wall where a plan was traced in detail. This drawing was seen by DME during a visit to 212 Wksp who promised that a drawing of the badge to be adopted by RCEME would be forthcoming. When this was received it was found there was some variance in detail between the two badges and necessary alterations were made to the original drawing to conform to the Cdn badge.

Hand carving of the badge, which is of birch (on a mahogany shield) was done by Cfn Hall, who deserves much credit for his careful workmanship and the time and effort put on the project. The shield was completed by Mr. Roney, civilian carpenter of the workshop.

The colouring of the badge was done by Spr Burton and L/Cpl Fawson and conforms to the colours specified for the badge with the exception of the collar and chain which was done in gold in contrast to the silver horse and the world which has green blue water to emphasize the continents.



The crest hangs in the lecture and recreation room of 212 Wksp.

REME and the National Service Soldier.....

by MAJOR P. ANDREWS, ptsc, AMI Mech E,
REME Interchange Officer at the RCEME School

In this article I want to give the reader a picture of how the National Service soldier is introduced into and trained in REME, and how and where he is employed until his subsequent transfer to the Territorial Army on completion of his eighteen months' period of service. Where convenient I shall make reference to the regular intake training procedure.

I think it will be advisable first to give a brief picture of the REME Training Organization

The current strength of the Royal Electrical and Mechanical Engineers is approximately 30, 000, just over half of whom are National Service intake, and to train and upgrade the regular soldier, an elaborate training organization exists.

Basic training is carried out either under the control of the DME at the REME Training Centre, training battalions and selected workshops, or under the direct control of DGMT at the Army Basic Training Centres, and occasionally at civilian training establishments.

Advanced training, for upgrading within a trade, is carried out in workshops. Higher grade training of artificers, leading artisan staff sergeants and specialized trade training is the responsibility of the REME Training Centre.

The Training Centre, which is a brigadier's command, comprises the HQ RCEME Training Centre and REME Officers' School, situated at Arborfield, and four training battalions, viz: No. 3 (Telecommunications) Training Battalion REME situated at Arborfield; 4 (Armament) at Blackdown; 5 (Radar) at Arborfield; and 6 (Vehicle) at Borden. For reasons of administrative convenience, No. 3 Battalion includes a regimental and corps training element.

Each battalion is a lieutenant colonel's command, and in size approximates the RCEME School at Kingston.

Closely associated with the Training Centre, but under the direct control of the War Office, are 1 and 2 Training Battalions REME, and 1 Regimental Training Company. The first two are recruit Training Battalions and are responsible for the basic arms training of all REME recruits, both regular and National Service. The Training Company carries out regimental refresher training of regular soldiers of all ranks.

Most readers will be aware that the British Government introduced conscription for the three services during the last war, and that a system of national service has been retained in operation during the post-war period. This period of service is eighteen months and, with a few exceptions, applies to all men of call-up age. Workers in certain undermanned industries eg, agriculture and mining, are exempt from military service.

The system of calling-up is quite flexible. Deferments or exemptions are granted wherever hardship may be caused to the individual, or where interference of education may occur. Indentured apprentices and university students fall within the latter category. In order to give greater flexibility, authority is delegated to the Commanding Officer of the unit to which the National Service recruit is ordered to report to grant deferments up to 28 days. Requests for longer periods of deferment are referred to the War Office. This helps to eliminate hardship where the reasons for deferment arise after the individual receives his calling-up notification.

The call-up is continuous throughout the year, and apart from the deferees for whom there is special machinery, is on an age basis. On attaining the age of 18, men are notified by press and radio to report to their local Ministry of Labour office for registration for national service. At the time of registration the man is given a choice of service and arm and, providing that he has the necessary educational standards and vacancies exist, he is eventually called up for service in the arm of his first choice.

The various arms of the three services specify certain minimum standards of education which the man must have attained in order to be accepted for employment therein. In the army the highest educational standards are demanded equally by the Intelligence Corps, the Royal Corps of Signals and the Royal Electrical and Mechanical Engineers. Thus the National Service intake into REME contains a high proportion of top-grade personnel.

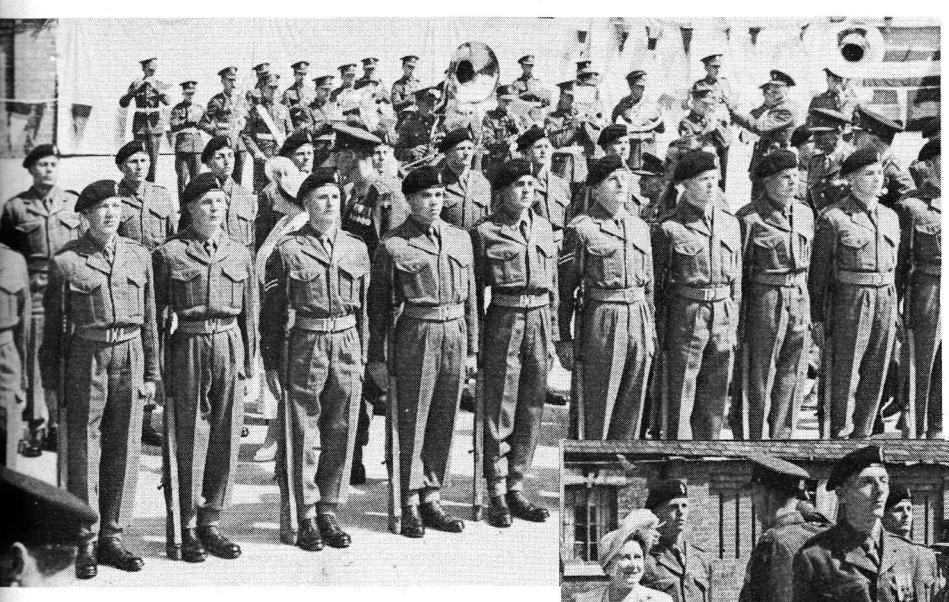
Subsequent to registration the men receive a medical examination where those unfit are weeded out.

National Service personnel upon call-up to REME report to 1 and 2 Training Battalions at two-weekly intervals. On arrival everything

Her Majesty the Queen INSPECTS THE REME

GUARD OF HONOR ON A RECENT VISIT TO THE TOWN OF WORKSOP, NOTTINGHAM.

HER MAJESTY THE QUEEN talking to Captain Woodrow, REME, the Guard Commander, followed by Major R. W. Wilkinson, the CO of the Unit, and his Grace the Mayor of Worksop.



Photos by kind permission of the R. E. M. E. Magazine

possible is done to ease the change from civilian to military life. Each man is interviewed to ascertain his personal attributes, his liking for sports, etc, and to iron out any personal worries should these exist. The underlying principle is to let each man feel that the Army is interested in him not only as a number, but also as an individual.

The National Service recruits spend six weeks in the training battalion, which time is devoted to basic training designed to produce a man thoroughly trained in the weapons of an infantry section, with an elementary knowledge of the use of ground, map reading, hygiene, regimental subjects, and to be mentally and physically fit so that he is qualified to commence progressive training on joining his unit. During this time the new recruits are not allowed to wear civilian clothes, and for the first two weeks they are confined to the camp area. That is, until they have learned to be sufficiently smart soldiers to show themselves to the outside world.

On first joining the battalion each recruit is interviewed by Personnel Selection Officers, and under their supervision completes various dexterity, mental ability and intelligence tests. On the basis of the results, and upon the man's background and personal preference, the PSOs make their recommendations for trade employment.

When all personnel of a given intake have been interviewed, a board is formed of the PSOs and members of the Personnel Branch of the War Office. Each recruit's case is considered and he is allotted a trade in relation to his ability and to current trade requirements. Wherever possible the PSO's initial recommendation is confirmed.

Once a man has been confirmed as a potential tradesman in a given group, he cannot be changed to another group without War Office authority.

Regular recruits go through a similar procedure on arrival at the training battalions. However, since they will be in the army for a longer time, their initial training period is extended to ten weeks. The National Service and regular recruits are therefore segregated into separate training companies.

Facilities exist at the training battalions for trade testing soldiers who claim to be proficient in a trade.

On completion of their training period, any one of the following alternatives may occur:-

(a) Men classified as 'general duties', or potential tradesmen for whom courses are not immediately available, are posted to workshops where they are employed as workshop assistants in their future trade, until such time as a course vacancy exists.

(b) Potential tradesmen for whom courses are available are posted either to the REME Training Centre or to an Army Basic Training Centre according to the trade to which they have been allotted.

(c) Recruits who successfully pass a trade test are posted to a suitable workshop for employment within their trade.

Armourer	(Weeks)	16
Draughtsman (mechanical)		14
Electrician CE		25
Electrician V & P		16
Electro depositor		12
Fitter		14
Instrument mechanic		22
Pattern maker		20
Telecommunications mechanic		30
Toolmaker		20
Turner		16
Vehicle mechanic		20
Watchmaker		24
Blacksmith		12
Carpenter and joiner		13
Coach painter		9
Grinder precision		12
Machinist metal		12
Moulder		10
Sheet metal worker		12
Welder		8
Wood turner and machinist		8
Clerks REME		6
Coach trimmer		9
Operator tire repair plant		4
Driver Class III		8
Storeman		4

Fig 1

In the table, Fig 1, are listed the various trades and the duration of the courses which are available to the National Service soldier. It will be seen that these vary from four weeks up to thirty weeks. The reader will appreciate that in the higher grade courses such as telecommuications mechanic, the time available after the soldier has completed his training until the time that he is transferred to the Territorial Army is very short, with the net result that the tradesman has very little practice in applying his trade. This factor has had the effect of cutting down the duration of the courses to the time necessary for teaching the bare essentials. In the case of the regular soldier time is not such an urgent factor and the courses in many instances are longer.

Upon completion of his eighteen months National Service the soldier returns to civilian life, but he is not entirely finished with the ser-

(Continued on page 29)

COTC RCEME

by O/C D. S. CAMPBELL and H. D. PLUNKETT

Lady Godiva, the goddess of the engineers, must have flipped right over in her grave one day early in May, in the year of our Lord 1948. For it was at that time that a group of her precious infants, all budding engineers, reported to the RCEME School at Barriefield to start their way along that rough and rocky road which would ultimately lead to a commission in the Canadian Officers' Training Corps.

The story of this class of officer cadets, some of whom have just taken their third phase at 205 Base Workshop, Camp Borden; some their second phase at 202 Base Workshop, Montreal; and some are on civvy street, actually started six months before we reached the School. Each university contingent of the COTC recruited men for the various corps of the army, the cream of course going to RCEME. The successful candidates were all funnelled from the different units to the RCEME School at Barriefield, on completion of lectures, to start on their corps' and general military training.

After seven weeks exposure to the tender mercies of instructors supplied by the Infantry Corps we were considered to be sufficiently humbled and beaten down to be safely turned over to the instructors in the Artisan company of the school, who had devised a new type of torture. Their method was much more subtle than that of the GMT instructors. What they would do was to show a group of cadets a machine tool (which in most cases the majority of the class had never seen), make one demonstration of its operation, and then say: "All right, gentlemen, let's see what you can do with it". We were then turned loose and allowed to discover the intricacies of the machines themselves.

Actually, it was not really that bad. The cadets spent seven weeks in the artisan section, using all the machines and tools commonly found in a machine shop. This enabled those cadets who had no previous industrial experience to learn some of the limitations and capabilities of the equipment as well as to appreciate how much time is involved in various operations. The instruction was of the best, and every cadet benefited by his stay in this section. The period, while serving as an introductory session for the majority of the cadets, provided an ideal refresher course for those with previous experience in a machine shop but who had been away from it for a time.

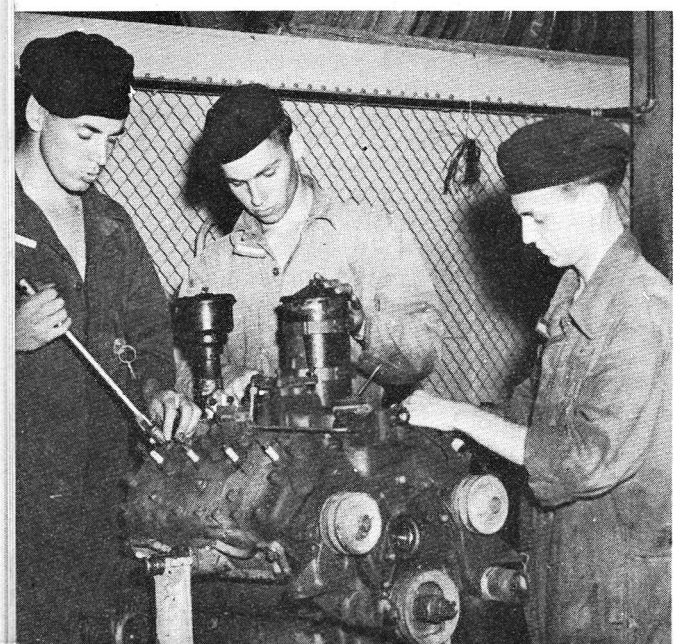
When we arrived at Barriefield we were all comparative strangers, but since we had so much in common, in no time at all each cadet knew all the others. We arrived in three groups; the first two early in May roughly one week apart and the third about a month later. By the time the last group arrived to swell our ranks to about eighty the first two platoons were old soldiers and looked down on those in 3 platoon, known as the awkward squad. This type of friendly rivalry kept up all summer, since we were all RCEME cadets and hence had no other corps to 'show up'.

Barriefield was not all work, however, Queen's Summer School provided a lot of good times for the RCEME cadets, much to the chagrin of those RC Sigs cadets up the road at Vimy. They never had a chance with the girls. In fact, one of the acquaintances set up in Kingston resulted in a marriage (and one of the better parties) in Montreal last year. We had several swim parades to St. Lawrence Beach when the weather became too oppressive. Platoon parties, all of which were riotous successes (with perhaps a little too much riot on some occasions) added to the summer's fun.

Last summer, when we again reported for training, our numbers had been reduced to about sixty-five bodies. There were several new faces, provided by cadets who had either skipped one summer's training to work in industry, or had transferred from other corps. We had men with us who were wearing the hats and insignia of the Armoured Corps, Artillery and Engineers. All were engineering students who had gone astray in their first year but had finally come home, albeit a trifle late.

The French-speaking cadets really came into their own in Montreal. They were indispensable when it came to arranging a date or merely making conversation with those cute little French Canadian gals. However, since they were on home ground our bilingual friends were not always present to land their talents. At times like these it was essential to make one's own way. Surprising how fluent (in a practical form, of course) the boys became! And in a very short time too.

Our time at Montreal was not all social, by any means. We were put to work the very day we got there. In our first year everyone had taken the same training but here we were



split up into two broad classifications - electrical and mechanical - depending on our courses at university. The electrical students concentrated on the electrical and telecommunications sections while the mechanicals naturally spent most of their time in the machine shop and working on the vehicles. We gained a lot of good practical experience which will doubtless prove invaluable when we go to work after graduation, either with the army, or on civvy street.

There were several pleasant interludes during our course at 202 Base Workshop. These took the form of field trips to various industries throughout the city and its environs. Actually, the trip to Sherbrooke to visit Canadian Ingersoll Rand can't be classified as staying in the environs of the city, but all the rest were. We visited the Pepsi Cola plant, Canadian Congoleum, Dominion Bridge, and Northern Electric. Perhaps the most exciting was the trip to 426 Transport Squadron of the RCAF at Dorval. They took us up for a flip over the city. For many of the cadets it was the first flight and was most enjoyable. This is the famous 'Thunderbird' squadron which is now doing transport work between Tacoma, Wash, and Japan for the United Nations.

On two separate occasions, we organized and carried out functions which proved that we had other skills than mechanics. The first occasion was a mess dinner at which we bid hail to Lt-Col Sangster, said farewell to Major Beddows, and wished good luck to Officer Cadet Anctil who was getting married. We were granted complete control of the mess for the affair; we appointed our own mess committee and really put on a bang-up show. (See Oct 49 Quarterly)

The outstanding feature, however, was the guard of honour we mounted for Brig Morton when he came to officiate at the graduation ceremonies of the RCOC cadets. We had our own guard commander, sergeant-major and quartermaster who handled the entire show, both from the training and administrative ends. Even the Ordnance cadets admitted that we showed them something and the soldiers in the workshop were quite proud of us since we proved that RCEME, outnumbered as we were, were still as good or better men on the parade square than any other units around there.

Just before we left Montreal in late August a forest fire broke out near Ste. Therese, and after a few days threatened the village of Terrebonne Heights. The RCEME workshops were called out, and the three platoons of COTC were

Second phase officer cadets at 202 Base Workshop Montreal. Top: l to r, H. Laferriere; R. Duguay; M. Clement. Middle: W.E. Royds; D.P. Word; M.A. Fraser. Bottom: W.A. Adams; T. MacAulay; G.H. Laferriere.

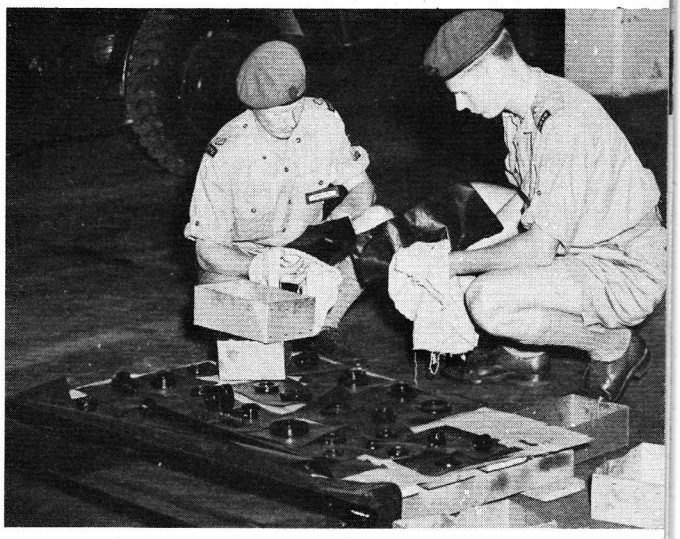
strengthened with soldiers and went up to the fire five platoons strong. We went in around 2200 hours and after slugging away for about 26 hours with only one hour's sleep the fire was brought under control in that area. It was a rough go while it lasted and the RCEME cadets behaved creditably. They certainly did not back down, as can be seen in the fact that some of the cadets came out of the fire and went straight into hospital. We were alerted to go back the next day but it was not necessary.

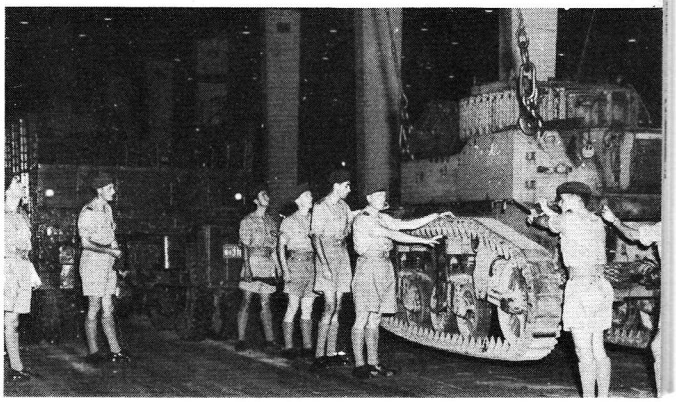
Thus the farewell to 202 Workshop was a mixture of fire, smoke and parade square grandeur. The first question the boys asked when they got to 205 Base Workshop this summer was "Do they have any forest fires around here?" That is one part of our training which will always stand out.

Our ranks this year have been decreased to 26 bodies. There were only three new faces, one of whom transferred from RC Sigs, the other two being cadets who stayed out for one year. The first draft, twelve strong, reported to these sand dunes on 10 May, and about three hours after our arrival we had (a) been documented, (b) had an interview with our senior instructor, (c) been equipped with what new clothing we needed and (d) assigned to our quarters. Really efficient! Of course our numbers were much smaller and after two years of being issued clothing and equipment there was little that we needed.

The next morning we were at work in the workshop. Once again the electricals and mechanicals were separated, the electricals starting in the electrical shop and the rest of us in the machine shop. This year however the shops are smaller, the grounds smaller, and with extra instructors brought in to help us, the training is on a much more personal basis. We were given a few days to familiarize ourselves with the machines and organization of the workshop and then were slapped into production work. The more experienced students handled the complicated jobs while the greener cadets did work which they were capable of performing.

Major Whittingham was not in camp for the first few days that we were here, but as soon as he returned he was introduced to us and proceeded to make his presence felt, particularly around the mess. He induced the cadets to enter the bridge tournament held every Friday





Also at Montreal. Top: l to r, G.C. Parks; G.H. Paterson; J. Stormich; W.W. Dudley; H. Kurry. Upper Middle: R.S. Johnston; J. McCallum. Lower Middle: P.B.O. McNally; L.A. Yashowich; D.D. Barkwell; L.E. Parker. Bottom: W.G. Adams; T. Simmons; N.R.C. Trew; T.E. Davies; R.L. Colborne; D.M. Davies; T.E. Flynn and T.L. Fash.

night (they started right in by copping the low prize very consistently, and the high prize occasionally) as well as other mess functions. Each week a cadet volunteered to handle the entertainment for the dining-in night or mess dinner, resulting in some hilarious evenings. Several cadets served on the committee which organized a cocktail party and dance.

The first week we had a sports afternoon, on which we challenged the soldiers to a game of softball (no comment regarding the outcome), but since then Ottawa decreed that training in infantry tactics will have precedence over sports. The result was our chief instructor arranged a training programme cunningly designed to teach us how fortunate we were to be in RCEME, rather than infantry. Since we went through somewhat similar training during our GMT, this work was not too hard on us. We have done some sports since then though. One afternoon we had a volleyball game and one evening we played a team of craftsmen in basketball. Perhaps it's not cricket to comment on the outcome of the basketball and not mention the softball game, so suffice to say that we whipped 'em.

By the time the rest of the cadets got here on the first of June we knew the score around the workshop and camp and were able to brief the new arrivals on local peculiarities. The result was that they made fewer errors than we did and by now a 'faux pas' by one of the cadets is a thing of the past.

One of the innovations this year is the training the mechanicals receive on heavy engineering equipment. This is the one phase of our course outside the machine shop, in which we work on equipment strictly of a civilian nature. Granted, they are RCE vehicles but any two D-8 tractors are the same, whether they have 'RCE' or the name of a civilian company painted on them. Experience gained working on this type of equipment could prove invaluable in the future, for few undergraduate engineers have the opportunity to sweat over tractors, shovels, cranes and bulldozers.

Now that we are all here for this year's training we are split up into small groups and spread all over the workshop, just as last year. The work done this year, however, is in some respects more complicated and responsible than that previously undertaken. Whereas last year we would help a craftsman overhaul an engine, this year we work nearby, under his supervision.

Arrangements were made to visit the shipyards at Collingwood, Dominion Arsenals at Lindsay, General Electric at Peterboro and Stelco at Hamilton. We were also taken out to watch the recovery of a D-7 tractor from a bed of quicksand. The 26 cadets had 26 ideas of how to do the job, but when it was finally recovered the method used was actually a combination of ideas proffered by the cadets.

This year we received a series of lectures on corps training from Major Murray and workshop officers. After studying the organization and responsibilities of the various RCEME formations we were given a chance to observe them in the field.

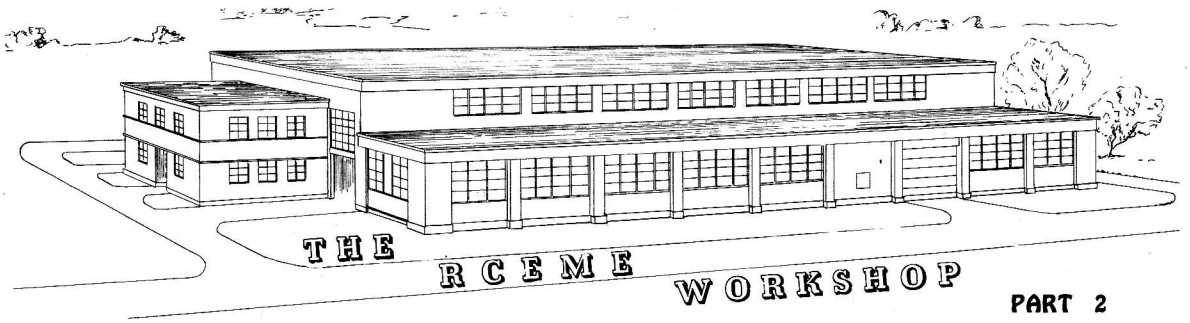
On different occasions we went out and sited recovery posts and workshops in the vicinity of Camp Borden. To liven up these evenings one of the syndicates arranged a subtle joke on a senior officer of 205 Workshop (we'll say no more—our confidential reports have not yet been completed) and made a banner which indicated the joke. They raised it in the middle of their workshop site and posted a guard. The guard was not very smart, however, as another group of cadets infiltrated removed the flag as proof of their prowess in infantry tactics. The custody of this banner was the cause of several skirmishes and a lot of psychological warfare before the captors managed to erect it over the hut.

Another evening we went out with a recovery vehicle and recovered a 3/4 ton Dodge which had become a casualty. By the time four syndicates of cadets had recovered it, the truck which had been in bad shape to begin with, was really a casualty. These schemes were the first training we received in a RCEME officer's duties outside of a base workshop. The exercises taught us these duties in an interesting and effective manner.

Several of the cadets have purchased cars (the newest model was a '37 Plymouth) with the result that we have been entertained with stories of the latest trouble of the car-owners. Every time they go on a trip bets are made concerning the safe return of the vehicle. Every night during the week the proud owners can be seen crawling around under their prized possessions in an attempt to make them fit for another week-end. It is amusing to hear them cry on each others' shoulders when they start adding up the cost of repairing their 'bargains'. These lads certainly are learning how to repair a vehicle, even if it is the hard way. Each swears now that his next car will be a new one. They are speaking from experience, and after seeing what they have gone through the rest of the cadets agree with them.

Our attitude towards the course has not been entirely sedate and serene. There have been numerous occasions on which we squawked loud and long. In some cases we got what we wanted, in the majority it was flatly refused. Looking back over the past three years from a purely personal angle, we don't think any cadet has a complaint concerning his treatment or training which he is not willing to forget in the long run.

(Continued on page 39)



THE RCEME WORKSHOP

PART 2

In this second article on the 100 man RCEME workshop, we have sectional and isometric views of a workshop, as drawn up by the Royal Canadian Engineers, following a DME floor plan layout. This plan follows, generally, the requirements outlined in the first article, in the July issue of the RCEME Quarterly. If any new RCEME workshop construction is effected, it is likely that this is the design that will be used. In discussing this particular layout we will see to what extent it conforms to the sound general engineering principles needed in an efficient workshop.

by Lieut H.F. PROTHEROE, RCEME

The plan is for a workshop of concrete, steel and glass: ie 100% fireproof. The side elevation (see fig 2) shows that maximum daylight is admitted through window and glass brick panels comprising 65% of the wall area. The design of the building is basically functional, simple and economical, yet the lines are pleasing to the eye. The overall dimensions, 200' x 150' x 27' high, provide adequate space for the functioning of the 100 men in the workshop. Detailed specifications of works and material for the plan illustrated cover some eighty closely typewritten pages indicating the complexity and cost involved in such a project.

Fig 1 shows the floor plan. It will be noted that floor areas of the different sections approximately equal those required for the 100-man complement mentioned previously.

Detailed blueprints of these section layouts are available to Command or Senior EMEs and workshop commanders, from DME Workshops Section.

All offices are contained in the front projection of the building and are separated from the workshop proper by a fire-proof and sound-proof wall.

In this unit are the OC's, general and control offices. The space on the second floor is utilized for lecturing, draughting, and projection rooms, or for a canteen, library or similar requirements.

The inner fire wall is bay-formed to give an overall view of the shop floor. Both the entrance and exit 'Multiplex' doors are located adjacent to the control office for facility of control of traffic through the shop.

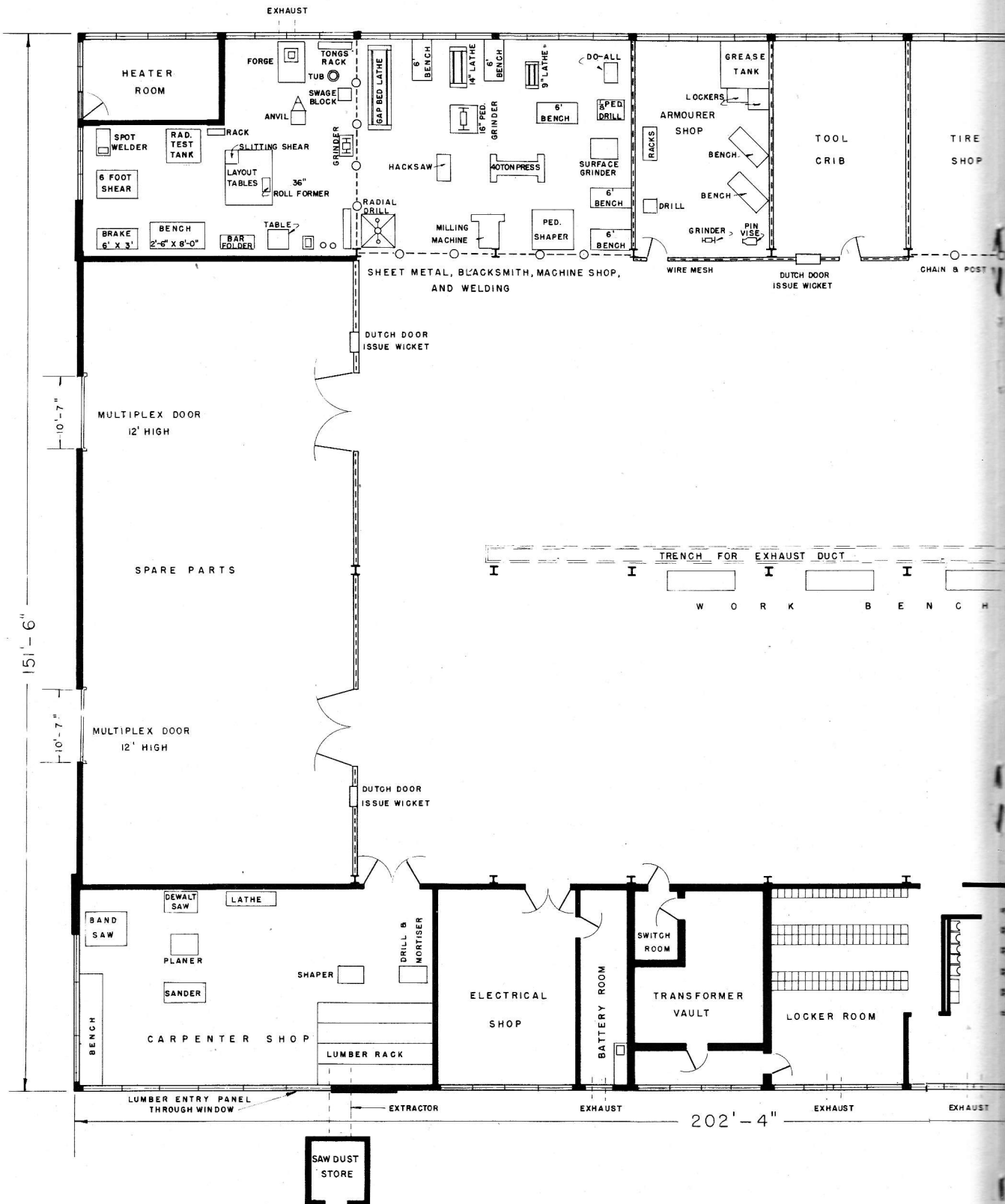
Economics played a major roll in the construction design of this permanent-type shop, thus the steel roof is supported by centre supporting columns spaced at 30-ft intervals. This interval is used wherever possible to provide section partitions either singly or double. Solid partition lines on the plan view indicate permanent construction which is used only when fire, fumes and security precautions demand it.

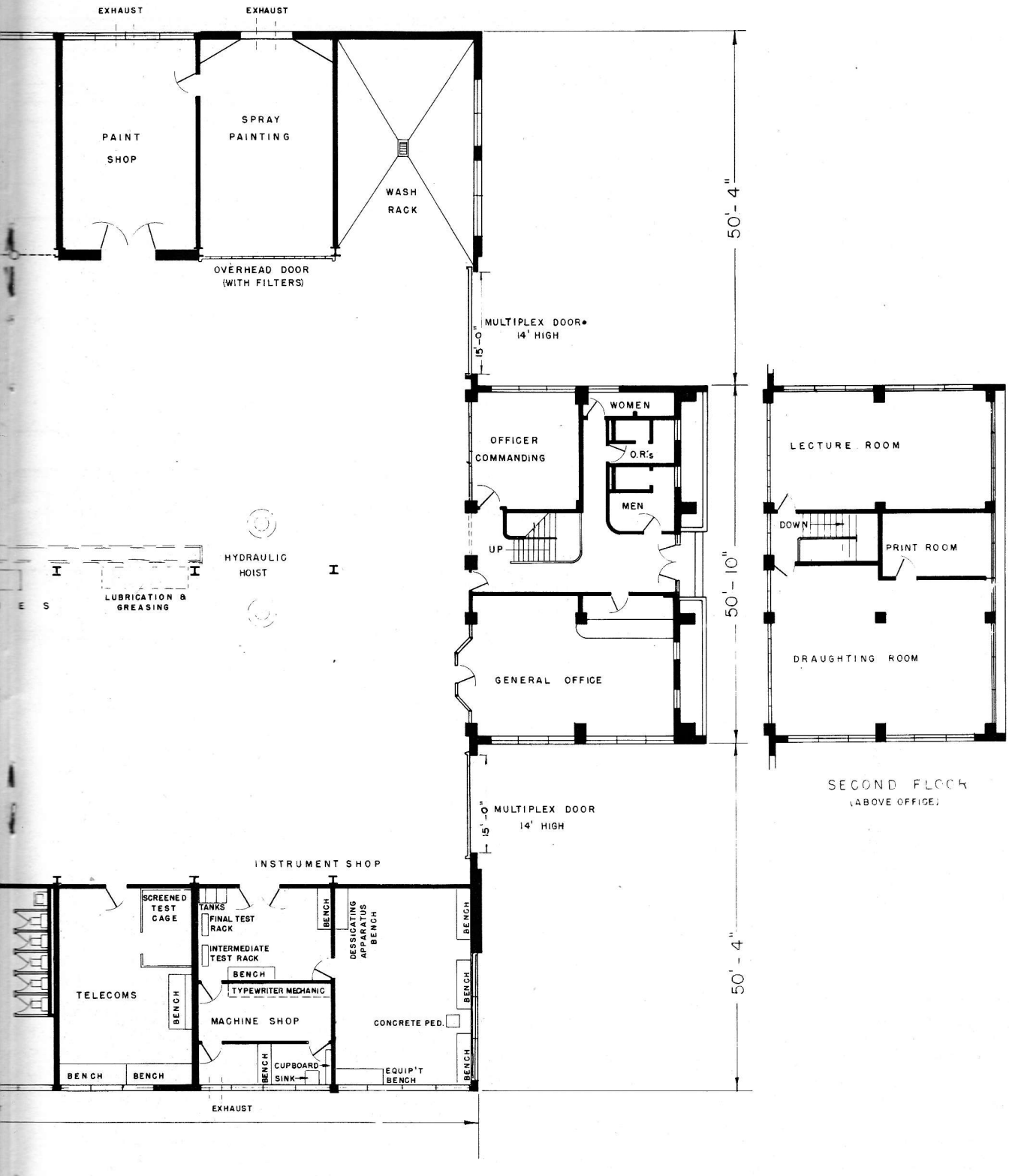
In order that the space between these centre columns might be utilized, work benches, lubricating and greasing equipments and the hydraulic hoists are placed so as to be adjacent to vehicles and other equipments being repaired on the floor. It is suggested that vehicles be parked nosed-in at an angle of approximately 45° to these benches for ease of servicing and maximum all-round clearances.

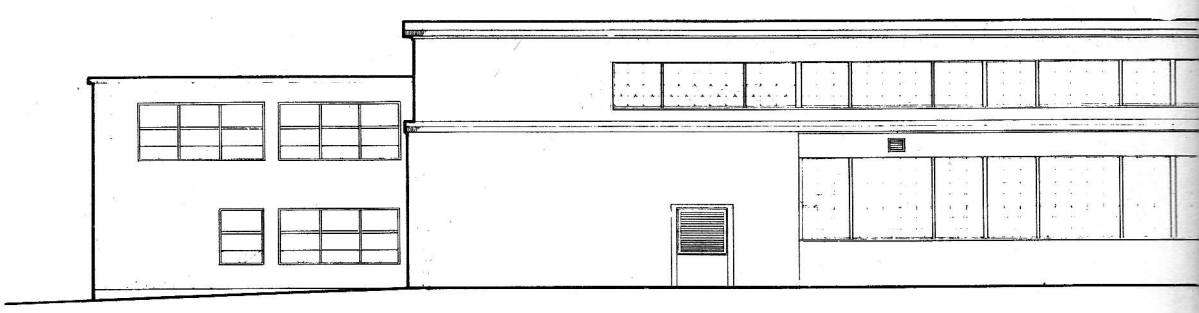
With this arrangement traffic enters the shop, proceeds up one side and down the other and out the exit door.

The RCOC Spare Parts Stores Section being at the extreme end of the shop provides for ease of supply from the outside and is also centrally located to sections inside the workshop. One of the advantages of this layout is that in the event of expansion (lengthwise) the SPSS is the only section that need be moved. This move would be the least complicated, requiring no altering of permanent installations. Only bins and shelving which are easily dismantled would be involved.

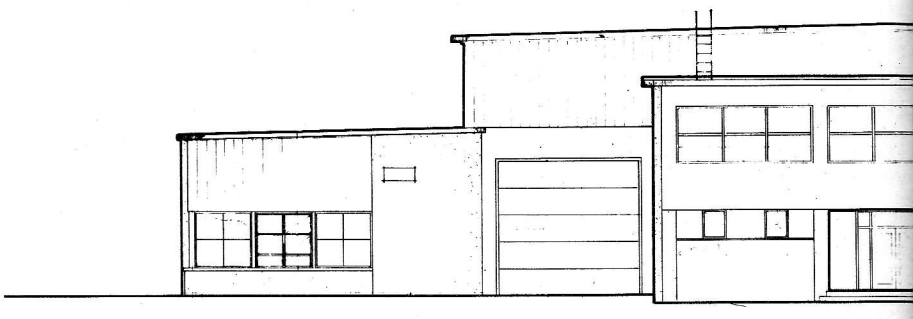
Now a word on grouping. First those sections requiring permanent type construction for partitions are grouped together. As seen, these are the electrical shop, battery room, transformer vault, tels shop and instrument shop. Here, all special electrical services may be brought in and distributed to one particular locale only. Insulation against fumes, dust, noise,


EXHAUST
HEATER ROOM
FORGE
TONGS RACK
TUB
SWAGE BLOCK
ANVIL
GAP BED LATHE
6' BENCH
14" LATHE
6' BENCH
9" LATHE
DO-ALL
GREASE TANK
LOCKERS
ARMOURER SHOP
TOOL CRIB
TIRE SHOP
SPOT WELDER
RAD. TEST TANK
RACK
SLITTING SHEAR
GRINDER
16" PED. GRINDER
6' BENCH
PED. DRILL
RACKS
6 FOOT SHEAR
LAYOUT TABLES
36" ROLL FORMER
HACKSAW
40TON PRESS
SURFACE GRINDER
BENCH
BENCH
RADIAL DRILL
6' BENCH
DRILL
BRAKE 6' X 3'
BENCH 2'-6" X 8'-0"
BAR FOLDER
TABLE
MILLING MACHINE
PED. SHAPER
6' BENCH
GRINDER
PIN VISE
SHEET METAL, BLACKSMITH, MACHINE SHOP, AND WELDING
WIRE MESH
DUTCH DOOR ISSUE WICKET
CHAIN & POST
DUTCH DOOR ISSUE WICKET
MULTIPLEX DOOR 12' HIGH
10'-7"
SPARE PARTS
TRENCH FOR EXHAUST DUCT
W O R K B E N C H
151'-6"
10'-7"
MULTIPLEX DOOR 12' HIGH
DUTCH DOOR ISSUE WICKET
DEWALT SAW
LATHE
BAND SAW
PLANER
SHAPER
DRILL & MORTISER
SANDER
BENCH
CARPENTER SHOP
LUMBER RACK
ELECTRICAL SHOP
BATTERY ROOM
SWITCH ROOM
TRANSFORMER VAULT
LOCKER ROOM
LUMBER ENTRY PANEL THROUGH WINDOW
EXTRACTOR
EXHAUST
202'-4"
EXHAUST
EXHAUST
SAW DUST STORE


EXHAUST
EXHAUST
PAINT SHOP
SPRAY PAINTING
WASH RACK
OVERHEAD DOOR (WITH FILTERS)
MULTIPLEX DOOR 14' HIGH
15'-0"
50'-4"
WOMEN
O.R.'s
MEN
OFFICER COMMANDING
UP
HYDRAULIC HOIST
LUBRICATION & GREASING
GENERAL OFFICE
50'-10"
LECTURE ROOM
DOWN
PRINT ROOM
DRAUGHTING ROOM
SECOND FLOOR (ABOVE OFFICE)
15'-0" MULTIPLEX DOOR 14' HIGH
INSTRUMENT SHOP
SCREENED TEST CAGE
TANKS
FINAL TEST RACK
INTERMEDIATE TEST RACK
BENCH
TYPEWRITER MECHANIC
DESSICATING APPARATUS BENCH
TELECOMS
MACHINE SHOP
CONCRETE PED.
CUPBOARD
SINK
EQUIP'T BENCH
EXHAUST
50'-4"



SIDE ELEVATION



FRONT ELEVATION

Fig 2

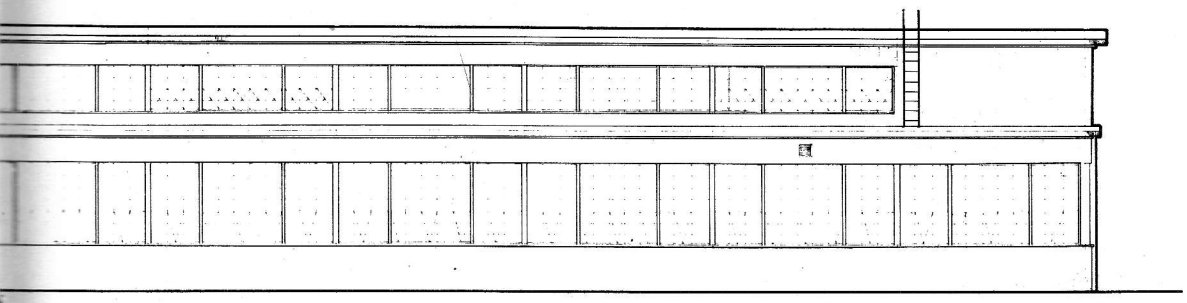
dirt, explosion and electrical interference is provided economically here, and the remainder of the shop is available for further re-arrangement if required in the future.

Again, the wash-rack, spray booth (built-in in this plan), paint shop and tire shop are grouped (adjacent to one another) for economy and facility in the design of exhaust systems, and because these sections are the 'dirty' sections in any workshop.

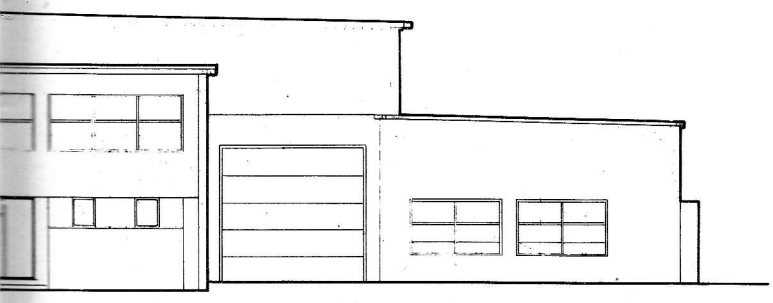
The armament and machines shops are adjacent because like and sequential work is done and noise of operation is confined to one corner of the shop.

One omission in this plan is a good solution to the problem of isolating the body and fender repairs section and its noise of panel bearing, from the rest of the workshop. Also unsolved is the problem of adequately exhausting fumes and isolating the overpowering noise of tank engines when these are being run inside the workshop, as happens during cold weather.

An answer to these problems might be to use the floor space shown for the SPSS for this purpose. Close it off from the shop by means of sliding doors, insulate it and provide it with an adequate exhaust system. Thus the tank work might be better organized; the exhaust system



V A T I O N



E V A T I O N

would not need to be as large as that required if this work were done on the floor proper and the rest of the workshop would benefit.

The SPSS could be located in a cage in the centre of the floor thus making it even more centrally located and decreasing the distance to all sections requiring its services. Wickets could be provided on both sides and stock arranged within the cage peculiar to that side of the workshop which it serviced. In this arrangement the tool crib could be incorporated as a unit within the SPSS cage thus giving more room to the Armourer's shop.

The only serious disadvantage of this solution is that all stock would have to be trucked from outside to the SPSS through the worksh An alternative might be to locate the SPSS a right angles to the main axis of the shop.

To conclude: An attempt has been made in these two articles to show some of the more important factors that must be considered in building a RCEME workshop that is adequate and answers the many diversified requirements of second echelon and minor base work.

And as pointed out before, a compromise must be made between the ideal plan and an efficient working solution which is economical in every respect.

CORPS ASSOCIATION

BRIG GRANT REPORTS ON HIS VISIT TO WESTERN GROUPS

At a meeting of the Executive Committee of your Association, held on February 25, 1950, it was decided that closer liaison with Chapters, Groups and Reserve Units RCEME, should be carried out by members of the Executive Committee. It was suggested that this liaison could best be carried out by periodic visits to as many Groups as possible each year. These visits would enable your Executive to have 'first-hand' discussions with the membership on the aims and objects of the Association and in turn hear about the difficulties and problems of the Group, if any.

One of the most important functions of our Association is to foster development of our Corps. This can only be done by giving the maximum assistance to our Reserve units through active participation or by supporting them locally through the building up of a strong Supplementary Reserve.

With the increase in practically all RCEME Reserve establishments, there is a great need for technically trained officers and skilled tradesmen.

As your President, it was my pleasure to plan and carry out a visit to our Groups in Western Canada. A schedule was arranged well in advance of the actual visit and dinner meetings were organized in Winnipeg, Edmonton, Vancouver and Victoria. It was planned to have at each meeting as many of our members as were able to attend, together with a representative group of industrialists. The support of industry, particularly those employing men of trade skills required in our Corps, is most vital to successful RCEME Reserve units.

Lt Col Fred Robbins and his committee in Winnipeg advised me early in April that they were all organized for a large meeting to be held on May 15. However, they had not counted on the Red River 'uprising', which not only created a tremendous amount of damage to property, but was the cause of all Reserve Force units being called out on twenty-four hour duty for many days. Of necessity, our well-planned Winnipeg meeting had to be cancelled, and it was with deep regrets that I passed through Winnipeg on the morning of May 15, unable to meet that Group at what I know would have been a most happy and successful gathering. I hope that we can call the Winnipeg visit a postponement, not a cancellation.

Calgary and Edmonton were the next points of call. Calgary unfortunately does not appear to have enough ex-RCEME officers or Reserve Force officers to form a group as yet. It will only be a matter of time before we will have our Association represented here, as Reserve units are in the process of formation, and I might add that workshop facilities here are excellent, both for the Active and the Reserve Forces. Calgary has a very promising future for our Corps.

Lt Col Roger Jobson, Command EME, very kindly met me in Calgary and after a conducted tour of the Active Force workshop, drove me to Edmonton, where Captain Couper, CO of the Reserve unit, had organized an excellent meeting with representation of ex-RCEME officers, Reserve RCEME and Active Force officers, together with several industrial representatives. This Edmonton meeting not only gave our Association an opportunity to tell Edmonton industries something of our objectives, but as your President it was my pleasure to take part in the formation of the Edmonton Group, this being their inaugural meeting, and I can report that it was a most enthusiastic one. As in Calgary, I had an opportunity to visit the workshops. Although facilities here are not as good as in Calgary, the boys were turning out good work. I was delighted to have the command's most northerly RCEME workshop represented by my genial friend, Major Dalrymple, and to report that he is really 'sold' on the 'north country'.

Vancouver on May 22 was another date to be remembered. My old friend, Colonel Norman Sherman, Lt Col 'Squid' MacInnis, OC Vancouver RCEME Reserve, and their committee, had their Vancouver Group out in force, together with an excellent representation from industry. In all, some 80 persons attended this dinner meeting at the United Services Club at Jericho, and if the interest shown in the question period after our meeting is any criterion, our Vancouver Reserve units are in for a successful operation.

Workshop facilities in Vancouver are 'tops'. The accommodation provided for both the Active Force and the Reserve are excellent, and I have never seen in civilian industry a finer workshop layout than No. 214 Active Force Base Workshop. Major Hagey and his staff are to be congratulated.

My last point of call was Victoria, where Col 'Gibbie' Gibson has gathered an enthusiastic RCEME Association Group together. The dinner meeting, held at the Services Club, was an excellent representation of Reserve, ex-RCEME officers and local industrialists, who included in their number the Minister of Labour for the Province of British Columbia. At this meeting, there was shown the same lively interest in the question period that was experienced at the Vancouver meeting. The Reserve units in Victoria were most enthusiastic about the change in the new establishments. As rumour had it, they would now be able to reclaim their over strength presently attached to Vancouver. Workshop and training facilities for both Active and Reserve are not as adequate as they should be; however, they permit of a good job being done.

The Victoria Group meeting was a most satisfactory conclusion to my visit to Western Canada. The enthusiasm and interest shown by the Western Groups augurs well for a healthy and growing interest in the objectives of our Corps Association, the Reserve Army, and that important link in our National Defence, the Supplementary Reserve.

G. M. Grant, CBE, Brigadier,
President RCEME Corps Association.

"Since our last report of news we /the Publicity Committee of your Corps Association/ have not received any answers to our many letters addressed to the Group and Chapter chairmen for interesting items to be used in this column.

So, by this means, we are now asking the membership at large to forward direct to us any information that might be of interest to our other members."

The address again is Capt W. H. Ackhurst, Chairman, Publicity Committee, RCEME Corps Association, 132 St Patrick Street, Toronto.

(LUBRICANTS continued from page 6)

today.

The adoption of a longer oil change interval is a revolutionary step and will no doubt meet bitter opposition from many quarters, but the need for greater economy will prevail and will be the deciding factor, especially when there is proof positive that engine life and operation are in no way affected.

If by this time you are not thoroughly convinced that army engine oils deserve a blue ribbon for first prize in their field, but still require a straightening out of ideas, I suggest using a vice on your head. Or better still, keep reading future issues of the RCEME Quarterly, as they will contain a series of articles dealing with fuels and lubricants, their history, production, and uses, together with tests conducted on petroleum products and their significance.

(NATIONAL SERVICE continued from page 18)

vices. Depending on the location of his home, he will be transferred either to the Territorial Army (where he becomes a member of his local TA unit and will continue to attend weekly parades and annual training camps), or to the Supplementary Reserve where his continuation training is confined to attendance at annual training camps.

Recruits who, by their background and the results of their tests, are considered by the Personnel Selection Officers to have officer potentialities, are filtered off during the first two weeks of service and are drafted to a special platoon where they can be given particular attention. In addition to the six weeks' basic training they receive a further five weeks' pre-officer cadet school training, and are then sent on a sixteen week course at the Officer Cadet School.

On successful completion of this course they are posted to the REME Training Centre, where they attend either a National Service EME Course of fourteen weeks' duration on armament and vehicles, or a National Service Telecommunications course of twenty-six weeks' duration. They are then posted for duty in the UK or to certain Overseas Commands, generally to BAOS, to receive further in-job training until their period of national service expires and they are transferred to the Territorial Army, still retaining their commissions.

****

ARTISTS & DRAUGHTSMEN ATTENTION!!

Do not forget the RCEME School gate competition. **31 Oct the deadline.** See page 17 July issue RCEME QUARTERLY.

****

Spare Parts Scaling

by WOII D. S. WHITE, 228 Workshop RCEME, Hagersville

/The author (who has had extensive experience in Scales Branch REME) lays down the fundamentals for forecasting army supply requirements, with particular regard to Spare Parts Tech Stores.

He describes the steps taken in the UK to provide accurate forecasts, by means of a properly set-up Scales Branch REME.

It may be added that a Scales Section also forms part of the establishment of DME, Ottawa; 202 Base Workshop, Montreal, and 204 Base Workshop, London. Owing to their small size, their activities are very limited. —Editors/

If the experience hard won in two world wars is to be utilized the time for preparation for a third is the present. In both wars the actual declaration found the democracies lamentably unprepared, both in organization and materiel.

No doubt the preparation period regarding materiel can be considered as comparatively short. The production potential of the North American continent is too well known to be commented on. Undoubtedly due attention is being given to the progressive production of suitable prototypes, which alter and progress with changing conditions and increasing knowledge.

What of the organizational preparation? The fact to be remembered is the tremendous growth of the service on the declaration of war. That growth is extremely rapid and it is desirable that all organization in peace time be planned to take in three phases: (1) maintenance of the service in peace; (2) capacity to expand rapidly without disruption; (3) maintenance of the expanded service in war.

Any organization should maintain the same form in all three phases. If the form of any given organization alters from phase to phase then the habitual knowledge acquired by personnel during phase 1 is lost and training must start again from the ground up. This is especially important as the personnel operating during phase 1 are the nucleous necessary for training and direction during phase 2.

There is a lesson to be learned from the fact that it was necessary to form a separate mechanical and electrical repair organization in the middle of the last war. It is reasonable to assume that not sufficient account had been taken in pre-war organization of the huge expansion of mechanical transport services. The old organization was swamped and only by the grace of God was there a breathing space for re-organization.

At the end of the war the liaison between the supply organization and the repair organization was far from perfect with regard to the provision of spare parts, let alone at the beginning.

It is the supply problem in war upon which the success or failure of any army depends. This is axiomatic and really needs no repeating, but a few examples of success and failure on just that point may be remembered with profit. Napoleon's failure in his advance on Moscow, Rommel's failure in his advance on Egypt and the Allies' success in their invasion of Europe through their pre-fabricated ports well illustrate the point. In each case the deciding factor was supply and the nearness of failure of the Allies in invasion when a storm in the English Channel blew up and damaged the pre-fabricated ports is too fresh in memory to be forgotten quickly.

With the highly complex mechanical and electronic equipment of modern war the adequate supply of spare parts becomes a difficult problem to solve. Assuming that the production of those spare parts is assured the problem becomes one of organization.

In Britain the problem has been tackled by the setting up of Scales Branch REME.

Peace time holds very little in way of a problem, for what the supply organization does not hold they can obtain from the manufacturers fairly quickly. In any case no critical situation is affected by holding or not holding any particular kind of spare part. In war the supply of spare parts many thousands of miles away from the manufacturers is an acute problem. The only answer is to hold stocks of all necessary spare parts in the actual theater of war. The problem then devolves into what kind and what quantity of each are to be held in the theater. Obviously it is out of the question to hold such masses of spare parts of all kinds that any demand can be met. Usage figures of the past are worse than useless, for what may be adequate provision in Canada may well be totally inadequate in Korea. The problem is technical and is tackled from that standpoint and not left to a non-technical corps planning from usage figures. If usage figures are to be

(Continued on Page 41

MC of S

by CAPT F. J. SERGI, RCEME

When the Editor of the Quarterly approached me, as a graduate of the Military College of Science, to write this article, I thought it a very good opportunity to pass on some information which might be helpful to those officers selected to take the Technical Staff Course.

I shall divide this article into two parts. The first part will deal with general information about the College. The second part will describe briefly various trips I took on the Continent during leave. This is a wonderful opportunity for Canadian officers to re-visit the Continent with the very attractive feature of being paid while doing so.

The Military College of Science is located on the outskirts of Shrivenham village in Berkshire. The village has a population of about 300 and can boast mention in the Domesday Survey. The college occupies the former estate of the Earl of Barrington and includes the old manor house called Beckett Hall. The nearest big town is Swindon, a typical English industrial town, about seven miles west. Oxford is only twenty miles away and can be easily reached by bus or train. Frequent trains from the West Country stop at Swindon, and London is only 85 minutes away.

Prior to and during the Second World War, the College was spread throughout England. For instance, the FCI School was in Bury, Lancs, the Armament Section in Stoke-on-Trent and the Vehicle School at Chobham. With it all in one location, co-ordination of instruction is a much easier task.

Except for the manor house which was built centuries ago, all buildings on the campus were completed in 1937 and 1938. These are of the Sandhurst block type having sections converted to temporary lecture rooms, laboratories or living quarters for single officers.

The object of the College is best explained by an extract from its charter:

"The Military College of Science will be a centre of study and will have the role of educating officers in science and technology so that they may be capable of appreciating the scientists' and engineers' problems with relation to the technological aspect of war. It will also train officers to apply their military knowledge and experience to these problems in order that they may later advise those responsible for the design and development of material, regarding the practical military limitations and requirements."

The educational role of the College is fourfold.

(1) It proposes to train young officers primarily for the Royal Engineers, Royal Signals and the Royal Electrical and Mechanical Engineers who have shown aptitude for science while attending Sandhurst. At the completion of their two year course, their education will be of the London University Degree standard. Note: So far, there has been no influx of cadets from Sandhurst. The present classes are composed of officers whose university education was interrupted by the war. Once this backlog has been passed out then the really young officers from Sandhurst will be coming in.

(2) It proposes to train officers for appointment to the technical staff in the Army and the Ministry of Supply, allowing them to specialize in the particular aspects of applied science and technology required. It proposes also to give these officers instruction in the practice of production engineering and works organization. During the course, the military application of science and technology will be studied so that officers may appreciate the inter-relation between tactics and scientific development.

(3) It proposes to carry out post graduate courses for officers who have graduated from MC of S, Staff College or university; for civilians concerned with the technology of war sponsored by the Ministry of Supply; and officers of other services as required by those services.

(4) It proposes to train selected regimental officers in fundamental science to enable them to specialize in subjects as required in their own arm of the Service.

The instructional side of the College is based on four Faculties of Science, each of which, in addition to its instruction in pure science, also teaches the application of that science to the technology of military weapons.

instruments and vehicles.

The co-ordination to meet military requirements is carried out by the Directors of Study through the groups, which examine and discuss the problems entailed in the study and teaching of war materiel with special reference to its development, performance and employment. Other subjects which cover a field outside the scope of any particular faculty are studied and instruction is co-ordinated by panels.

The academic year consists of three ten-week terms, at the College proper, with a three week break between terms. The summer vacation term is thirteen weeks, part of which is spent at the College and the remainder at various military and industrial establishments.

Official leave is four weeks per annum; further leave comes under the heading of 'private studies'.

Lectures are usually from 0900 hrs - 1600 hrs except on Monday when they start at 1000 hrs. Saturdays and Sundays are free while Wednesday afternoon is religiously set aside for sports.

The two main courses are the Technical Staff course and the Young Officers course. A six months' course for IOOs has now been instituted, and as facilities improve, other courses will be made available.

Since Canadian officers will be interested primarily in the Technical Staff Officers' course, the first part of this article will be devoted entirely to it.

The broad allocation of subjects during the first year is shown at Fig 1.

The purpose of this purely academic year is to bring all students to the same standard of education. This will correspond to second year engineering at any recognized Canadian university (Part I BSc London University).

The summer vacation term at the end of the first year includes:

Study of production engineering for five weeks at Loughbrough College covering the various artisan trades, ie, blacksmithing, welding, tinsmithing, foundry, etc.

A vocational period of seven weeks at the MC of S which includes visits to industrial firms and military establishments.

Leave and private studies for four weeks.

MATHEMATICS

Algebra, trigonometry, analytical geometry, solid geometry, spherical trigonometry, integral and differential calculus, differential equations, numerical mathematics and statistics.

PHYSICS

Heat, light, sound, properties of matter, electricity and magnetism, modern electrical theory, atomic physics.

CHEMISTRY

General chemistry, physical chemistry, organic chemistry, chain reactions.

MECHANICAL ENGINEERING

Applied mechanics, hydraulics, drawing and graphics, machine design, strength of materials, thermodynamics, production engineering.

ELECTRICAL ENGINEERING

Basic principles, basic electronics.

Fig 1.

The second year summer vacation term is spent as follows:

Further study of production engineering for six weeks at Loughbrough College. Three weeks are spent on milling, shaping, boring, grinding, and other similar operations. The other three are in the electrical shop on electric motor, dynamo and transformer building, armature and rotor winding, etc.

A vocational period at the MC of S for six weeks includes visits and attachments to firms and establishments.

Leave and private studies for four weeks.

Two periods per week are set aside for military instruction on the 'staff' side of the course. The purpose of this instruction is to enable officers to take their places as staff officers in any military HQ or at the Ministry of Supply. By means of lectures, demonstrations and visits, officers are given a good background knowledge of all arms, their organization and tactics, the organization of formations,

Vehicle Group testing small arms at the college.

administration in the field and staff duties. Lectures on the duties of TSOs, organization of the War Office and the Ministry of Supply and certain aspects of weapons' production, are also given.

To increase the interest and value of lectures on military subjects, VIPs from the War Office and the Ministry of Supply, and Directors of the various arms and services are invited to speak on subjects of interest to all student officers.

A well-stocked library in Wellington Hall contains standard military and academic text books, major works of reference on scientific subjects and scientific periodicals, both British and foreign.

Each student is issued with the necessary text books and the stationery store supplies free all classroom requirements, such as pens, pencils, ink, paper, folders, drawing sets, slide rule, etc.

Single officers must live in bachelor quarters in Roberts Hall and Beckett Hall, the two messes. Roberts Hall is a converted OR barrack block while Beckett Hall is the old manor house. Each officer has a single room comfortably but not elaborately furnished. Living-in members of the instructional staff are allocated, proportionately, to each mess. All officers are members of both messes but to facilitate feeding, specific classes are allotted to each.

Married officers may apply for permission to live out with their families. Officers owning cars may live in the neighbouring villages if within a radius of twenty miles. Officers without transport are confined to the Swindon-Shrivenham bus route as bus service from other parts is inconvenient and irregular.

There are a limited number of married quarters on the college grounds. Canadians may obtain these quarters without any trouble if application is made early enough to the AA & QMG at CALE in London.

Beckett Hall, formerly the Earl of Barrington's Manor House now one of the Officers' Messes at the College.

With the present generous allowances for married Canadian officers and their families in England, they are in a position to obtain practically any accommodation by simply outbidding the British officers. This has caused some hard feelings and it is advisable that they be more discreet. Financially, married officers are better off not living in Government-provided quarters. It is therefore customary for Canadians to occupy married quarters in the College only temporarily, until outside accommodation is available. Since the difference in allowances between single and married Canadian officers in England is very much out of proportion, my advice to single officers going on this course, is to get married before 'crossing the pond'.

Since petrol rationing ended several months ago, a car is a great asset. Canadians can purchase one on the export quota, with immediate delivery, if they use Canadian funds or funds from a Canadian source, and agree to export it to Canada at the end of a year. If sta-

Main Subjects	HE (Guns) HE (Motors) Radar	Mach (Veh) Mach (Carr)	App Chem EE	Ballistics Telecomms	Eng Physics	
Subsidiary Subjects	HE	Mach (Veh) Mach (Carr)	EE EE (Veh) Fuels & Lubricants Lubricants & Plastics	Ballistics Eng Phys Metallurgy(2)	Armour Ammunition Telecomms Materials (Protection)	Metallurgy(1) Radar Survey

NOTE: Students may take 2 main and 5 subsidiary subjects or 3 main and 4 subsidiary subjects.

HE = Heat engines; Mach = Machines; EE = Electrical engineering.

Fig 2

tioned in England over a year, you can import a car into Canada duty free provided it is loaded on the ship you return on.

There is no hard and fast rule governing dress while attending lectures, except that uniform must be worn every Thursday and on the first day of each new term. For formal mess dinners, every Thursday evening, the dress is serge, blue patrols or dinner jacket. As all College functions are formal it is advisable to have either a tuxedo or tails.

Facilities exist at the College for most outdoor sports, and more are becoming available as the constructional programme proceeds and the grounds are improved. Games are organized by individual clubs, co-ordinated by the Athletic Union. Each club is officered by elected representatives from either staff or students supporting the club.

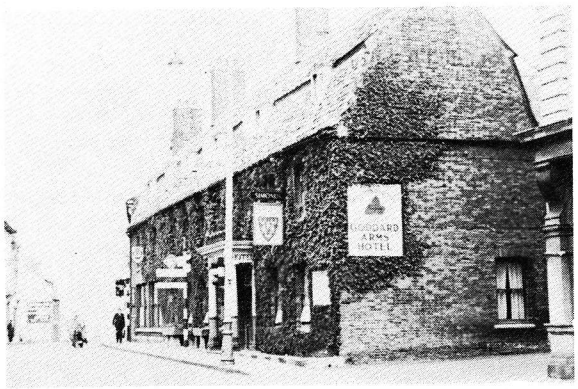
Sports facilities now available are: cricket, field hockey, soccer, rugger, rowing, basketball, atheletics, fencing, tennis, badminton, squash and shooting, as well as boating and sailing. Under the Social and Recreational Committee, there are a number of non-athelitic clubs to cater for individual interests and tastes. Chief among these are the photographic society, the musical club, the dramatic society, the debating club and the amateur radio club.

There are many golf courses within easy reach of the College and golfing is a year round sport.

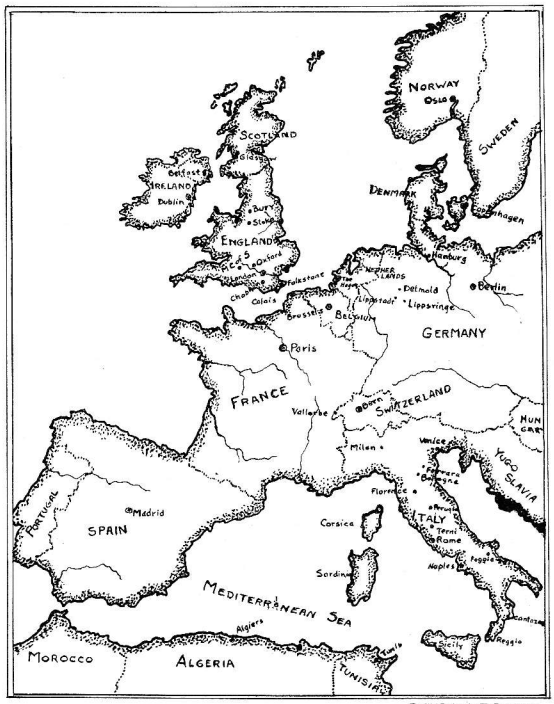
A cinema located near Roberts Hall operates on Monday, Wednesday and Friday nights.

* * * * * * * * *

The two year course was not "all work and no play", and I must say something about the trips I took during leave. Every Canadian should take the opportunity of visiting the Continent while in England. All countries are easily accessible except those behind the Iron Curtain. It is an education in itself to travel from country to country and observe the changes in customs, language, scenery and the outlook of the people.



One of the more favored drinking spots frequented by Students, in Swindon.



RCEME QUARTERLY MAP

The best currency on the Continent is the American collar. To get these legally you obtain American Express Traveller's cheques from the bank in which your pay is deposited. Any American Express Company office on the Continent will exchange these for local currency or American dollars. (The open market value of the dollar is usually about 20% higher than that offered by banks.)

Before proceeding with the actual trips, a word or two about the preparations required. The biggest problem is to decide where to go and how to get there. When that has been decided, the next thing is to see a reputable travel agency. They will look after getting tickets, passports, visas, hotel accommodation, meals, guides and a thousand and one things required on a pleasure trip. They will also issue Travellers' cheques and foreign currency to a limit set by the Foreign Exchange Board. Visas are required in all countries except Switzerland, and cost fifteen to twenty shillings.

On one trip, I made all the above arrangements on my own but later was forced to the conclusion that for the few dollars saved it was not worth it.

Canadian dollars will be accepted but have a lower exchange value and are not so well known.

During my first summer, I took three weeks' leave to visit relatives in Southern Italy. I had not seen them since 1944 when the Workshop I was with was stationed outside of Alife. Except for a few days in Rome my time was spent in travelling, and around the city of Catanzaro.

Thos Cook and Sons made all the arrangements very satisfactorily. The crack boat train, 'The Golden Arrow', took me from Waterloo Station to Folkestone where a Golden Arrow Ferry was waiting. The British Customs were easy going and in no time at all we were nearing Calais. This is a depressing sight: the ravages of war are still visible with little reconstruction.

At Calais, the French Customs were on strike so after having our passports stamped, we boarded the Rome-Orient Express which makes the Calais-Rome run without any changes. European trains are very much like the ones in England, of the corridor compartment type, and differ only in that all signs are in German, French and Italian — besetzs, occupé, occupato; frei, libre, libero.

In Paris there was a three hour stop so my Swiss travelling companion, who knew the city thoroughly, took me for a short tour and I had my first experience of sitting on a sidewalk cafe sipping a 'filtre'.

Continuing, at Vallorbes on the French-Swiss border, (customs asked for our passports but did not bother about our baggage) the steam locomotive was unhooked and an electric engine put on. From here to Reggio, the southernmost city in Italy, the railways are completely electrified.

We skirted Lake Maggiore - one of the better known Italian resort lakes - then Milan, Bologna, Florence, Lake Trosimeno, Temi and finally Rome. (The trip from London to Rome took approximately thirty-six hours.) To many officers who were in the Italian campaign the above names will bring back many memories.

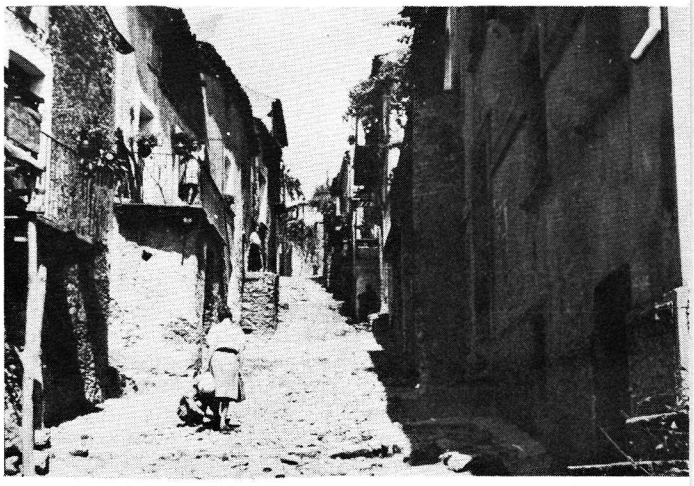
Rome - the Eternal City - was as beautiful and enticing as ever; too hot in July for comfort but I caught up on good food and drink - spaghetti and chianti stravecchio. What a change from the austere English fare! Sightseeing was my main occupation for the next three days. When at St. Peter's I got in with a crowd of Americans and had an audience with the Pope.

Night life in Rome is fast and expensive. The Apollo Club and the Belvedere Club, well known to Canadian officers, are still operating and are as crowded as ever. A more pleasant and less ruinous evening can be had in the sidewalk cafes. Here one can sit and relax, sipping

The Opera House, Paris, France.

Monument to Victor Emmanuel 11, Piazza Venezia, Rome.

A narrow street in a very old hill town in southern Italy.



'cafe espresso', vino or even beer, and listen to the strains of dance music.

The following year I paid another visit to Italy, arriving in Milan via Paris and Switzerland. My first night in Milan was spent at the Scala di Milan where Nathan Milstein, violin virtuosa was performing. It was a well spent 1000 lira!

One day of sightseeing and I then took the CIT bus (Compagnia Italiana Turistica) to Venice. This is a specially constructed bus seating thirty-two people. It has individual adjustable seats each with a folding table on the back which the passenger can use to fill in those numerous postcards, keep up a diary or even to play solitaire. It is also equipped with a radio and a well stocked bar. A pleasant signorina (stewardess) helps to keep your mind off the low flying and horn blowing. Her job is to look after the passengers and describe points of interest. To hold down this job, these girls must be able to talk many languages. There were Argentines, French, Americans, English and Swiss in my bus and our stewardess was able to speak all the languages without hesitation.

On arrival in Venice the bus was put away in the Municipal garage and I was on my own.

The Municipal Garage on the mainland, Venice. All cars must be parked here before the passengers can proceed to the Island city. All movement in the city proper is by water or on foot.

Having filled various forms at the CIT office, I was ushered to a waiting gondola and taken to the Albergo Luna just off the Canale Grande. On reaching terra firma again my reactions to my first trip in a gondola were that it is much over-rated and a very antiquated means of transportation. A regular Vaporetto and Motoscafo service — corresponding to bus and taxi service on land — are slowly driving the picturesque gondolas off the canals.

Next morning I started touring the Island City. Many people believe that some sort of water transport is necessary to get about. That is not quite true. Narrow sidewalks hug the sides of the canals and it is possible for pedestrians to travel all over Venice without getting their feet wet. The only inconvenience is in crossing to the other side of the canal. Bridges are necessary and these are several blocks apart.

The first place I visited was St Mark's Cathedral and the Piazza San Marco made famous by photographers. You get a good panoramic view of Venice and its surrounding islands from the belfry which is detached from the main body of the Cathedral.

On one side of the Cathedral is the 'Orloggio', a huge clock on top of a tower, marking the hours with a mechanical giant striking a bell. On the other side is the Doge's Palace, where masterpieces of Da Vinci, Raphael, Tintoretto and countless other less known Italian artists are hung. The Bridge of Sighs connects this building with the dungeons.

The Lido of Venice - a famous summer resort - is only twenty minutes away by Vaporetto. At night, one of the first sights to greet the visitor is a flashing neon Coca Cola sign. Billboards all over the Lido are plastered with these signs "Beveta Coca Cola, La sosta chi rimfresca — Drink Coca Cola, the pause that refreshes." This American custom has so taken over the city that even bright red gondolas ply the canals selling this ice cold drink.

After leaving Venice, I continued by bus to Florence via Ferrara and Bologna. In Florence I stopped at the Hotel Minerva, better known to Canadian officers as Hotel MacDonald. The character bartender, Jim, was still behind the bar. He welcomed me like a long lost friend and the evening went by swiftly, recalling many incidents which occurred when the Minerva was a Canadian Officers' leave centre.

From Florence, I passed through country well known to Canadian troops, Arezzo, Lake Trasimeno, Perugia, Assisi, Foligno, Spoletto, Terni and finally Rome. Terni, which was almost completely destroyed due to its importance as a steel producing centre, has been reconstructed and is again in full production.

Three days stay in Rome and then on to Naples via Cassino. A new town is springing up south of the ruins. The rebuilding of the Monastery is progressing rapidly, but the old town is still in ruins and will remain so as a war memorial.

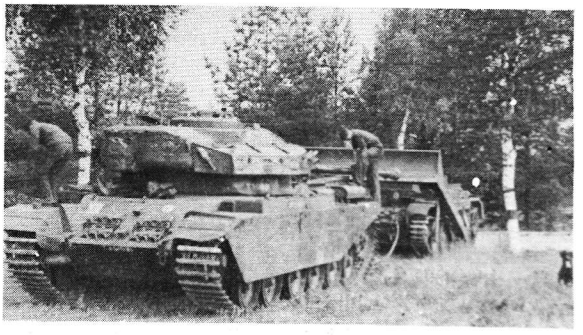
Naples has not changed much. Most of the bombed buildings have been rebuilt or torn down. The sights and smells still remain.

In December of my second year Capt Grant, RCAC, and myself (the only two single Canadian officers on the course) decided to see Paris on New Year's Eve. We made arrangements to fly on the 28th and to stay for a week. The week

proved rather short but not disappointing. Night life in Paris is all that it is cracked up to be. The days we spent sightseeing - the Eiffel Tower, La Madeleine, the Arc de Triomphe, Champs Elysees, Notre Dame Cathedral, Napoleon's Tomb, the Louvre, the Opera, and dozens of other interesting spots. At night we toured the cabarets and 'spectacles' - Bal Tabarin, Moulin Rouge, Folies Bergeres, Casino de Paris and other less known.

On New Year's Eve we found most of the night spots completely booked up ahead of time but we finally got a table at the 'Pigalle'. Champagne here cost 4100 francs per bottle but the floor show was well worth the expense. These shows are standard in most night spots and can be described as having beautiful costumes and scenery, bawdy jokes, G-strings, bare breasts and the inevitable can-can.

In my last year I decided not to take my three weeks summer leave so made arrangements for attachments to the REME School, Arborfield and the Fighting Vehicle Design Establishment, Chobham. While there word came through that my Military Director of Study at the College had arranged for me to proceed to Germany on a technical liaison visit to observe the Centurion tank in the field.



A Centurion casualty being recovered by a Valentine Dozer during a Scheme around the Detmold area in Germany.

The REME School at Lipstadt, Germany.

My first attachment was with an Armoured Brigade HQ at Bad Lippsringe. After learning about the armoured side of the brigade, the BEME showed me the REME set-up. A visit to an armoured brigade workshop and the REME School at Lippstadt concluded my tour at this HQ.

Next came a week's attachment to a Royal Tank regiment at Detmold. This regiment was on manoeuvres and I actually spent that week in the field, eating compo rations and sleeping in the open. This was a bit rough but I did observe the performance of the Centurion in the field.

My final attachment was with a heavy workshop in Hamburg. Here, complete overhaul of the tanks is undertaken by German labour except that British tradesmen only are allowed in the turret.

It was a wonderful two years. I wouldn't have missed them for the world.

The writer in the Piazzale San Marco, Venice. The Doge's palace is on the right and St. Mark's Cathedral in the background.

What do you know?

How well do you know the principles of good management?

Check yourself by means of the following quiz. Some of the statements given are true; the others are false. They have been made tricky purposely in order to stimulate thought and discussion. Place a check mark in either the true (T) or false (F) block, whichever applies. The answers considered correct by industrial relations experts are given on page 43.

Only by continually improving yourself in leadership can you be effective in securing the co-operation so necessary in doing a good supervisory job. Many good books are available for NCOs and officers who want to improve their methods of securing production by means of teamwork. One such book is 'Practical Supervision' by P.J. Kalsem (McGraw-Hill) from which many of the following quiz statements were taken. A number of service schools are including management subjects in their curriculum. A course based on one prepared for the US Air Force was introduced at the RCEME School this year when it was presented to a vehicle artificer class.

—Major C. N. Carscallen, RCEME School

1. The supervisor who is responsible to several bosses is in an advantageous position since he has the benefit of intimate contacts with more people in higher positions. (T) (F)

2. A good supervisor should be able to direct the activities of at least a dozen men. (T) (F)

3. To see if any of your men have initiative, it is a good idea to address a suggestion or an order to a group in general rather than to an individual. (T) (F)

4. If a supervisor can do a certain job better than anyone else in the group, he should not assign it to a subordinate. (T) (F)

5. A request usually gets more co-operation than any other type of order. (T) (F)

6. To build morale, a supervisor should treat every employee in exactly the same way in giving orders, assigning work and administering discipline. (T) (F)

7. A worker cannot be expected to be highly enthusiastic unless he understands the assignments given him and has been told something of their purpose. (T) (F)

8. Criticism of a man should be made in front of the group so they will realize they cannot get by with inferior work or infraction of rules. (T) (F)

9. The assignment of difficult jobs that offer a challenge is more conducive to good morale than the assignment of easy jobs. (T) (F)

10. Since so much of the business of a military unit must of necessity be conducted behind closed doors, men cannot reasonably expect to know about changes that affect them before the changes are put into practice. (T) (F)

11. Griping is always destructive to morale. (T) (F)

12. If a man expresses a grievance in a long-winded, angry manner, the supervisor should get him back on the beam by disposing of the case immediately. (T) (F)

13. If a complaining worker is wrong in his demands, the supervisor should make it easy for him to 'save face' in backing down. (T) (F)

14. Inconsistent use of disciplinary measures lower employee morale. (T) (F)

15. The basic principle of discipline is to punish those who commit offenses. (T) (F)

16. When a man has committed an offense against rules and regulations, it should be called to his attention as soon as possible. (T) (F)

17. After reprimanding a man for a violation of rules or for bad conduct, the wise supervisor prevents a recurrence by occasionally reminding him of it. (T) (F)

18. Planning a job is largely a matter of doing the job. (T) (F)

19. Extensive use of simultaneous, symmetrical and rhythmic motions of the two hands has a soporific effect on the worker and induces fatigue. (T) (F)

20. The final responsibility for the excellence of a job cannot be delegated to a member of a supervisor's group. (T) (F)

21. Whenever possible, an error should be corrected by the man who made the error. (T) (F)

22. When you make a mistake, you should give careful consideration to an airtight defense for presentation to the boss. (T) (F)

23. The man who has risen in rank is a distinct type of person with likes, dislikes and prejudices which differ from those of the lower ranks. (T) (F)

(COTC continued from page 22)

There have been many little things to which we took exception, either personally or as a body, but they were mostly minor details and easily forgotten.

Having gone through the mill of COTC training, the present class of third year RCEME cadets feels that it can offer some criticism of the course from the cadets' viewpoint.

Perhaps the chief complaint is that, in the first year, the cadets are granted all the advantages of an officer's life without the accompanying responsibilities. We feel that they should be placed under more strict regimentation in the first year and then granted further privileges in the succeeding years. For instance, they should not wear rank badges until they have completed one practical phase. Then they will appreciate what the King's commission entails.

Another complaint is that too little general indoctrination is given the new intake at university before they leave for camp. They should be told, for instance, that towels will not be supplied but can be purchased, and other minor details. They should also receive some basic instruction on how to wear the uniform, how to conduct themselves, and on the system of paying and returning compliments.

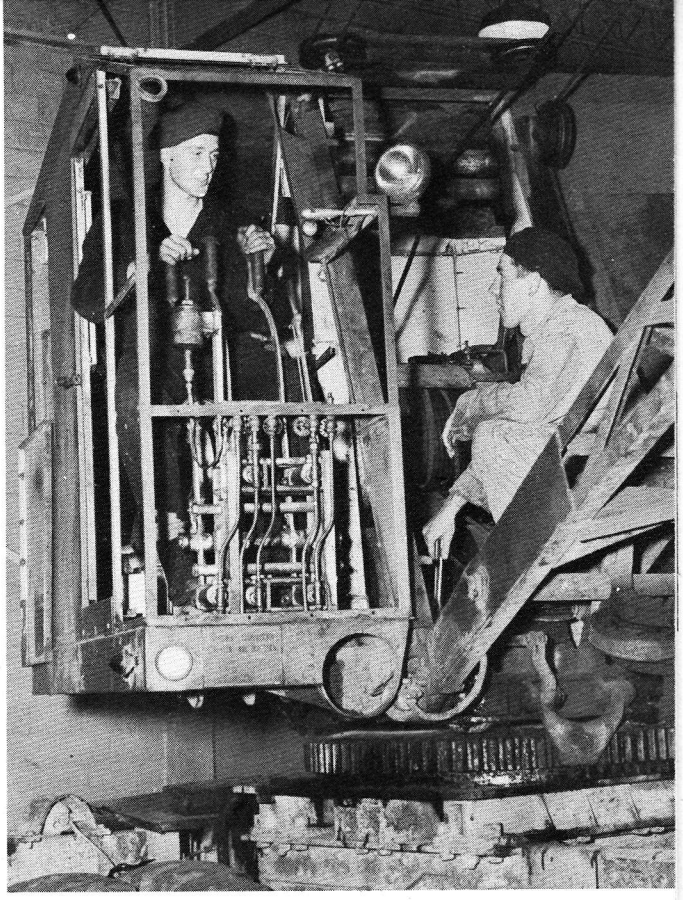
The fact that we have nothing to indicate our corps also hurts. By now, we are RCEME first and university second, yet we have no way of showing our attachment. Lanyards in corps' colours or corps' flashes under the university hat badge would improve this situation.

One of the best things which has come out of our training is the knowledge and insight we have received on how other parts of the country live and think. In our first year, we had cadets from almost every engineering school in Canada with us. Nova Scotians lived with Albertans; boys from the prairies kidded those from the central provinces and everyone teased the Maritimers.

In the second year fewer schools were represented, but now we were in the province of Quebec learning the customs of that section of Canada.

Though now few in number, a camaradarie developed which cannot help but be of some benefit in the future. It has shown itself in several instances, when the cadets have backed each other against some outside force. We might fool around a bit on our own parades, but let someone from another corps be watching and we'd smarten up and all work together as a team. It's a good spirit to have and to keep.

For the first two years we were under the capable guidance of Major H.W.F. Appleton, ED, GGFG, who was until last year RSO of the University of Toronto. In his first year he used the regular orderly room staff of the RCEME School. In Montreal he had as assistants two captains who were summer call-ups, Capt Stevens of the 17th Duke of York Hussars and Capt Goddu of the Regiment de Montmagny.

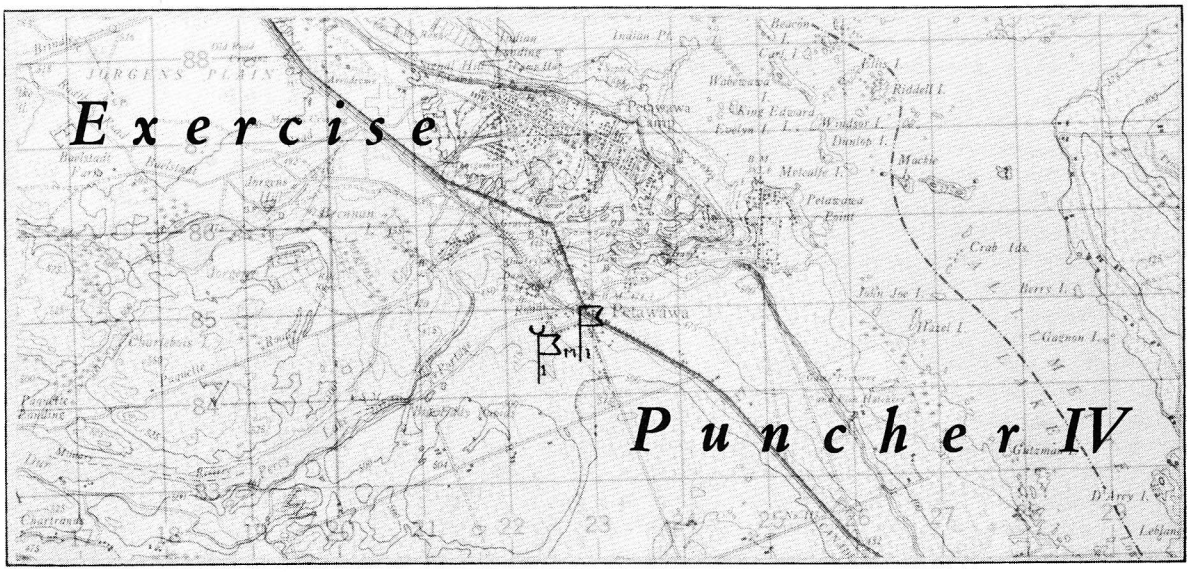


"heavy engineering machinery" O/C R.G. Grimsoiek, W. Budnewich.

This year we are under the tender mercies of Major K.L. Murray, RCEME, who came from DME to supervise our training and keep us in line. His assistants are Capt Pitts, RCEME, and Lt Creighton, RCIC, both summer call-ups.

Every year we sweated it out until the universities finally came through with the exam results; each time the sad news came along that a few cadets had failed to make the grade. The resulting celebrations were thus tempered slightly. This year, however, we had a clean sweep and for six of the cadets the results marked the end of the trail. At last they had that iron ring on their fingers and the degree behind their names. It was a hard grind, and a tough grind, but they came through with colours flying. May the authors, on behalf of all the RCEME cadets, offer them the sincerest congratulations and wishes of good luck in the future.

Those of us who graduate next year, or in two years expect to be crowding your heels in our chosen professions, so you had better get cracking and show your employers how you profited from COTC.



Active and Reserve Force RCEME from Central Command were represented on Exercise 'Puncher IV' held at Petawawa on 15 to 17 Aug 1950. The purpose of the scheme was to exercise the staffs of an infantry division in the field, and RCEME's part consisted of supplying a CREME and staff, and three workshops.

HQ RCEME 1 Inf Div consisted of an office tent, a sleeping tent, a wireless vehicle, and jeeps, and was staffed by a CREME, a 2 i/c, an adjutant and personnel to run the wireless. The workshops were sleeping tents situated in the divisional maintenance area some distance away from HQ, each with a jeep and somewhat understaffed by one officer, with personnel to run the two wireless vehicles shared by the three workshops. An actual recovery section for the scheme was made up of a breakdown vehicle and a dental lorry filled with spare tires. These were manned by two RCEME craftsmen and a RCASC driver, and attached to one of the workshops.

There was a Control Officer for each component of the exercise who presented problems in the form of fictitious messages to his component.

CREME handled a variety of these problems, ranging from the fitting of flame thrower apparatus on jeeps to tracing the cause of a fungus growth on binoculars. AWDs and recovery posts were planned and set up in accordance with the operational situation, and backloading, etc, arranged for the workshops from information in their routine returns to HQ. Workshop commanders showed considerable imagination in making up dummy messages of their own.

RCEME distinguished itself by being the only Corps to make a promotion in the field, and a RCEME officer was awarded the Petawawa Bronze Star with Palm, one of the two decorations awarded on the scheme! This special decoration was to have been made by one of the workshops.

Although field conditions did not prevail in the true sense of the word, the situation was sufficiently realistic to give an idea of an HQ RCEME set up on active service.

The whole exercise ran very smoothly and credit should be given to those responsible. It is also worth noting that due to a shortage of trained operators, RC Sigs were forced to use personnel from other Corps to run much of the wireless on the scheme. Although they had only a brief course in communications procedure before the exercise, the infantry personnel operating the RCEME wireless net did a very efficient job.

RCEME personnel participating in the exercise were:

Major J. S. Kitto, MBE	2 Company RCEME
Major A. W. Ackhurst	4 Tech Regt RCEME
Major D. C. Little	32 Tech Sqn RCEME
Capt D. H. Cumming	2 Sec A&T Staff
Capt F. Coultish	2 Company RCEME
Capt R. E. Austin	4 Tech Regt RCEME
Lt R. A. Hill	2 Company RCEME
Cfn Bernard	23 Comp Bde Gp Wksp RCEME
Cfn Cuthbertson	23 Comp Bde Gp Wksp RCEME

TIFFIES continued from page 9

civilian life at approximately thirty years of age.) Such men would then have had ten years civilian experience after the completion of their apprenticeship.) This policy definitely paid off within the Corps.

If, by some horrible whim of fate, an armament artificer had failed the Military College of Science Course, he would have been given the choice of carrying on in the Corps as a private armourer, or taking his discharge at no expense to himself.

The above remarks will show, I think, how the general high standard of armament artificers was obtained, pre-war, and it might well be that in the interest of our Corps, say twenty-five per cent of our intake should be men of the type mentioned above. I am sure that if the rank is given so the candidate can draw pay comparable to what he would earn in civilian life, there would be no difficulty in attracting the time-served mechanic. It is emphasized that the standard of trades skill required is that of a machinist or tool and die maker, not merely that of a fitter. This is most essential. If a tradesmen is a machinist, not simply a machine operator, but a time-served machinist, he will automatically be a fitter and will also have a fairly sound knowledge of all the allied trades.

As far as I was concerned, I enlisted as a private in the stores section early in 1933 knowing that within a year or so there would be a vacancy in the armament section. I had previously passed my trade test and was being considered for that vacancy. While waiting I worked as an RCOC storeman and had passed the first RCOC stores examination for promotion. When, two years later, that vacancy came up I was made a S/Sgt on probation straight from private. I proceeded to the MC of S in Dec 1938 and was on course there when the Second World War broke out. I was away from Canada for six years before I came back in 1944, via Italy.

* * * * * * * * *

SPARE PARTS SCALING continued from Page 30

used, they are used as a guide and not as a hard and fast criterion of future usage.

Scales Branch REME are responsible for assessing spare parts requirements in all circumstances, both in peace and war. Their documents are the authority upon which stocks of spare parts are held and necessarily upon which purchases of spare parts are made.

The ability to carry this out is based upon the highest possible engineering qualifications for the higher officers on the policy level. The assessors must possess the National Certificate of Engineering if civilian, or be armament artificers if military. Both military and civilian assessors are selected by personal interview to ensure that they possess the widest possible experience in military requirements.

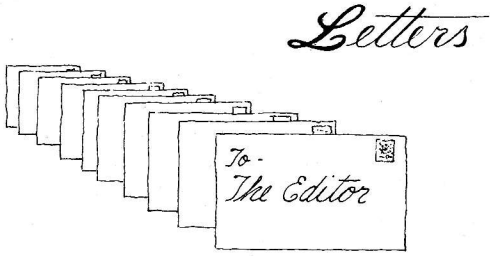
While carrying out the work assessors have access to all possible sources of information regarding the equipment upon which they are working. Use is made of military proving grounds and of manufacturers' test rigs to ensure that the widest possible knowledge of any given equipment is obtained.

Provision documents are so planned that they are used both in peace and war. This ensures progressive maintenance of the documents and at the same time ensures practical experience in the use of the documents by the supply organization staff. They are so planned that rapid expansion of the repair and supply organizations will not upset their use. On the contrary it is expected that their use will ensure rapid and smooth expansion of the services. In other words they meet the phase requirements mentioned earlier.

The Scales Branch is not an insular organization. It is well in touch with the actual workshop set-up, for field sections are maintained whose task it is to produce local scales and to keep an eye on usage rates and maintain channels of information from the user workshops to the assessors. The branch is prepared to answer questions of a technical nature at any time. Usually this is easier for Scales Branch because invariably assessors specialize in small numbers of equipments and become expert. In addition they have access to all sources of information. The workshop may well have only comparatively narrow sources of information.

Scale documents stand or fall on the Echelon Repair Schedules. They therefore stand or fall on the activities of the smaller REME formations. If the LAD insists upon overstocking and concealing spare parts and carrying out work that should be evacuated then Scales documents will eventually become distorted out of accord with reality, for the Scales Branch field sections may well be bamboozled by the concealment of stocks and usage figures into asking for increases in provision figures. As with the LAD so with the second line workshop.

That the army in general, and RCEME in particular, can be very useful to civilian authorities in times of difficulty and disaster in peace nobody can deny. The fact remains that the army's main job in peace is to prepare for war and organization should be upon that basis.



The Editor RCEME Quarterly:

Operation REDRAMP brought out points that we should bear in mind as applicable to emergencies generally—whether flood, fire or war. The expansion of the services—REDRAMP saw 6000 servicemen employed—with the increased use of equipment is the main source of RCEME problems.

Our organization must be flexible enough to take on commitments not normally our responsibility. Often we are the only people capable of operating unfamiliar equipment: searchlights and amphibious vehicles for instance. It is true this takes man power, but it often is the only way to get the equipment operating, and from our own selfish standpoint, keep it operating and out of the shops for a reasonable time.

We must also be prepared to operate without normal utilities. We may be left without water, heat, sanitation, communications and use of workshop equipment. Unfortunately most of our generating equipment is DC and cannot be cut in to the normal building circuits, even for light.

Often when getting assistance from outside workshops, only those craftsmen required for the actual work are requested. But supervisory and administrative personnel are also needed to make the craftsmen's efforts fully effective. This was noticeable not only in RCEME but on the dykes where at times hundreds of willing but undirected volunteers were more of an embarrassment than a help.

Alternative methods of communication are important to ensure control of recovery and repair detachments. Normal telephone circuits are overloaded and subject to failure; despatch riders are comparatively slow and roads may be blocked; wireless is often the only means of getting through. All RCEME should be able to operate wireless sets and know RT procedure.

Personal liaison at all levels—by phone or visit—again proved its value. Paper work is necessary and in static conditions we're apt to rely on it too much, but under difficult conditions it does not get the co-operation that personal contact does.

In an emergency, recovery makes a heavy load. Our recovery training does not provide sufficient skilled men to operate on a round-the-clock schedule. My personal opinion is that with our present restricted establishments all trades should be trained in recovery sufficiently to allow them to act as members of a recovery team; all NCOs should be trained to take charge of such a team.

The scarcity of equipment available in any community to meet an emergency is deplorable. Six or seven ambulances—not enough to evacuate the hospitals even at a leisurely rate—were all that Winnipeg and surrounding municipalities could muster. Dump trucks were insufficient to meet commitments; generators had to be flown in!

And, finally, maintenance in the initial stages at least suffers. The user units, with greatly increased equipment holdings, lack skilled operators. Besides, a bronco-busting, rush-urgent attitude prevails which makes people lose sight of the need for maintenance. Static signal units have not been designed to maintain sets and batteries of other arms (their normal responsibility in the field). So RCEME, to keep equipment serviceable and save itself future loads, must be ready to assume a great deal of first echelon work. The mobile servicing team in Winnipeg paid for itself many times.

C. M. R. Elmsley Lt Col DME

Lt Col Elmsley was at Flood Control HQ during 'Redramp'.

The Editor RCEME QUARTERLY

Dear Sir:

I have noted with interest the item on Page 6, of the July issue, regarding the assembly time of the 'Trick Jeep' ie, 4 minutes 39 seconds bettering a previous time of 6 minutes 20 seconds.

It may be of interest to your readers to know that a similar item appeared in the December 1949 issue of 'REME' Page 9-11, the time returned being 2 minutes 30 seconds.

As there may be a disparity between the methods of assembly ie, number of parts to be assembled or a difference in type, it would be interesting to see the two projects in detail, side by side, so that the times given could be considered on a more even basis.

A. Webb, WOII,
4 Company, RCEME.
Montreal.

One of the greatest labor-saving devices of today is—tomorrow.

ANSWERS TO QUIZ ON PAGE 38

1. False No supervisor should have to be directly responsible to more than one man at the same time.
2. False The number of subordinates assigned to the direction of one person must be limited - usually three to seven.
3. False Every necessary function of an organization or unit must be assigned specifically to an individual. "Everybody's work is nobody's work".
4. False Too many supervisors have work piled up on their desks because they have not learned to shift some of their responsibilities and worries to their subordinates.
5. True A request puts people at ease, prevents irritations, builds co-operation.
6. False Your subordinates are individuals with widely varying traits and therefore should not be treated exactly alike. For example, a mild reprimand of a sensitive employee can be as effective as a bawling out of a thick-skinned person.
7. True "Know-why" is the shortest, surest path to the "know-how" that turns out products faster. Workers who understand their jobs don't get bored and spend their time griping; they don't quit or stay away from work except for the most urgent reasons.
8. False It is a supervision axiom that criticism be made in private and praise in public. Your aim in criticism should be to obtain improvement, not to embarrass an employee.
9. True True job satisfaction comes when a man is able to utilize most of his experience and training. Although skilled workers sometimes have to work on routine, boring jobs, this is not an ideal situation.
10. False "Tell people in advance about changes that will affect them" is one of the fundamentals of good relations. Tell them why if possible. Get them to accept the change. Show how it will benefit them directly or indirectly; or if it is distateful, show the necessity for it. If security demands it, most army men will accept changes on short notice quite readily. However if there is no reason for security measures and such short notice is due to poor planning, the men's morale will be adversely affected.
11. False Griping of a constructive nature calls attention to grievances on which you should take immediate corrective action. Griping is also a healthy way of letting off steam. A wise supervisor gets many a good idea by listening to gripes. However, if the grievance is not corrected, griping may also be destructive to morale.
12. False Don't jump to conclusions. Allow the man to present his case in detail. This will give you a better basis on which to make a decision and will help make the man feel that he is getting a fair hearing.
13. True If the worker has no real cause for complaint, your aim is to persuade him of this fact. Why defeat your purpose by making it difficult for him to withdraw his compalint?
14. True It a supervisor is strict and severe one day and allows anything to get by the next, his men will become confused and irritated.
15. False The basic principle of discipline is to prevent recurrences of violations rather than to punish those responsible for past violations.
16. True The best time to take action is after the first offense, when mild measures may prove very effective.
17. False If you do keep reminding a man of a past violation, it is a confession that you have failed to make an effective reprimand, and it may earn for you a reputation as a nagger.
18. False Planning means outlining or scheduling a method or scheme of action, procedure or arrangement. It is largely a matter of advance thinking.
19. False The use of simultaneous, symmetrical and rhythmic motions enable the operator to do the manual work in practically an automatic fashion without any mental effort. It speeds up work and reduces fatigue.
20. True Although responsibilities, and the authority to go with them, should be delegated to members of your group, you as supervisor are finally responsible for both quality and speed. You should delegate responsibilities only to men who are qualified to take them.
21. True When a person has to correct his own errors, the necessity for doing high quality work is emphasized and in many cases valuable knowledge may be gained.
22. False Admit your mistakes. Defending them wastes time and irritates everyone concerned.
23. False Bosses are human beings, too.

BOLTS an' ASSORTED CLIPS

by ar-vek-tels

On the grapevine the Quarterly learns that the ADME Armament was severely shaken by the deterioration he found in some of the Coast Defence equipment which he inspected during a recent trip to the East Coast. There were distinct traces of rust in the bore of one Ordnance, ML, while the exterior in places was almost entirely devoid of paint.

In order to give support to his report the above photograph was taken to show one of the pieces of Coast Defence Artillery in question. No doubt he is trying to traverse the equipment so as to bear on the CPSS 'Princess Helene' docking in Digby Harbour.

* * * * * * * * * *

Winston Churchill told this one ..... "A man went to see his doctor with the complaint that the sleeping tablets he had prescribed did not cure his insomnia. "Can't I have some of that twilight sleep they talk about?" he asked. The doctor snorted: "Twilight sleep! Why, that's only for labour." The patient came back in a disgusted tone: "Isn't there anything for us Tories?"

* * * * * * * * * *

A recent church announcement read..... "The minister's sermon will be "How Can We Deal with the 'World Crisis?' Mrs. Powers will sing 'Search Me, Oh God'."

Why do drummers wear leopard skins? That's a good question; there are dozens of others just as good and to know the answers would make many of our military customs take on a new interest. We can think of quite a few but as we've said before, we cannot write letters to ourselves. So why not send us your question and we'll dig up the answer for you somewhere.

We are indebted to WOI Geo Collins, RSM the RCEME School, for the following interesting information supplied by the magazine 'SOLDIER' at his request. We quote:

"We cannot trace the origin of the sash and mace, but it has always been the policy to dress the Drum Major up as finely as possible. He needs the mace to control the movement of the Corps of Drums, vocal orders being useless when they are playing. Illustrations dating from the Peninsular War period (1808-1814) show the Drum Major carrying something like an ordinary pace stick. The ornate mace has probably developed from that.

"Back in the 16th century, and probably before that, the Colours were lodged with the Ensign (standard bearer) for safe keeping when the unit was not in the field. When Officers' Messes were set up the Ensign became a member of the Mess and the Colours came with him.

"The wearing of animal skins by the drummers dates back to the end of the 17th century. In those days the band consisted of drums and trumpets for the cavalry and drums and fifes or pipes for the infantry. Until the middle of the 18th century these instruments were played almost throughout the Army by negroes wearing animal skins. The negroes went, but left their skins behind."

* * * * * * * * * *

Congratulations to the Western Commander on completing four years of publication. We look forward with interest for each issue for the latest news of RCEME units in the two most western provinces and the north west.

Congratulations also to the Canadian Gunner on its eighteen page '3RD ANNIVERSARY NUMBER'. Although there is naturally enough not too much of particular interest to Electrical and Mechanical Engineers, we enjoy the paper with its excellent coverage of 'gunner' news.

During the annual Sask Prov Rifle Assoc meet at Dundurn Camp, 17 Jul to 19 Jul, personnel of 12 Coy RCEME won trophies and prizes as follows:

Greenshot Match
1st Cfn J.W. Atkins
2nd Sgt J.R. Hardy

Greenshot Aggregate
1st Sgt J.R. Hardy

British Consols
1st Cfn L.R. Chamberlain
2nd WOII A. Nicholson

Lieutenant Governors
1st stage
1st WOII A. Nicholson
2nd stage
1st Cfn L.R. Chamberlain

City of Saskatoon
4th Sgt J.R. Hardy

Brewer's Match
1st Sgt J.R. Hardy

Walker Team Match
2nd WOII A. Nicholson
Cfn J.B. Robertson
WOII W.T. Kingston

Nokomis Team Match
2nd WOII A. Nicholson
Cfn J.B. Robertson

Grand Aggregate
1st WOII A. Nicholson

Greenshot Team Match
1st Sgt J.R. Hardy
Cfn G. McDonald
Cpl L.W. McLeod

The following personnel won places on the twenty-four-man Ottawa team, to take part in the DCRA meet, to be held at Connaught Range Ottawa, Aug 14 to 19:

WOII A. Nicholson	Cfn J.B. Robertson
Cfn L.R. Chamberlain	WOII B.A.J. Hunder
WOII W.T. Kingston	Sgt J.R. Hardy

—Prairie Command Liaison Letter

Kingston was represented at the Ontario Rifle Association annual prize meet at Long Branch Rifle Ranges from Aug 4th to 10th inclusive. The RCEME School entered five marksmen, and as a team won the 'Old Chum' team competition.

The RSM of the RCEME School, WOI G. Collins, won the Lieut-Governor's match, the silver medal and the first prize money. He posted scores of 50 at 300 yards, and 47 at 600 yards in the qualifying stage, and a score of 70 in the final stage, for a clean win over the best riflemen of the Province, as well as the numerous visitors which included the British Rifle Team.

The team from the RCEME School which

Standing l to r: Cpl F.L. Wilson, Capt J. Pinder-Moss, Lt E. Ryan. Sitting, WOI A.S. Etter, WO I G. Collins.

---

on the 'Old Chum' challenge cup, and first prize money for the coached 600 yard team competition, was composed of Capt J. Pinder-Moss, Lieut E. Ryan, RCN(R) retd, RSM G. Collins, and WOI Bud Etter. Their team score of 189 points was a clean win, four points ahead of their nearest rivals. Individual scores were 46, 48, 48, 47 for the team members in the order listed.

The members of the team also did well in the individual competitions. In addition to winning the Lieut-Governor's match, WOI Collins placed second in the Gibson memorial match, a rapid fire competition at 300 yards, where his score was 46 out of a possible 50 points. His shooting throughout the meet was consistently good.

Lieut Ryan shot with the team as an associate member, and posted an aggregate total of 501 points to tie for first place in the Mercer Memorial Aggregate. Lieut Ryan proved by his scores that he is also a strong contender for a place on the Bisley Team.

Capt Pinder-Moss and Cpl Wilson shot as tyros in the Provincial competition, and both did well. Capt Pinder-Moss contributed to the team win in the 'Old Chum' match, and Cpl Wilson posted a possible at 500 yards in the Lait-Brassy match. WOI Etter tied for first place in the Duke of Cornwall and York match, with a possible at 300 yards and one point off at 600 yards, but lost the shoot-off for the silver medal to a more experienced marksman.

The team of five riflemen put the city of Kingston on the map at the Provincial Rifle Meet, and proved that Corps troops can be every bit as good marksmen as the infantry can produce, and also proved to the visiting British Rifle Team that Canadians can do well on the rifle ranges.

—WOI Bud Etter

who's where

Brig J.W. Bishop, VAG, AHQ

COLONELS

Boehm, C.R. Dir Mechanical Engineering
Franklin, R.L. Director Vehicle Development
Mayhew, E.C., Cdn Arsenals, Ottawa

LT-COLONELS

Bradbury, G.F., Comd EME, Prairie Comd
Campbell, R.A., Cdn Army Staff College, Kingston
Coleman, E.W., CO 17 Coy, London, Ont
Dunlop, J.R., CO The RCEME School, Kingston
Elmsley, C.M.R. ADME Plans DME, AHQ
Hamilton, W.G., US Armed Forces Staff Course
Huddleston, A.N., Cdn Arsenals, Ltd, Ottawa
Hunt, W.S., DSD, AHQ
Jobson, R.F., Comd EME, Western Comd
Jones, C.W., Deputy Dir Mech Engin'g
Kirby, C.G., ADME Vehicle Section, DME, AHQ
King, E.C., ADME Workshop Section, DME, AHQ
King, P.C., Staff RMC, Kingston
Mason, H.L.K., Comd EME, Central Comd
McKibbin, K.H., DMT, AHQ
Mendelsohn, A., CAS Washington, USA
Miller, A., Comd EME, Quebec Comd
Monk, A.O., DVD, AHQ, Ottawa
Morgan, H.G.F., Comd EME, Eastern Comd
Ramsay, R.H., ADME P&T, DME, AHQ
Sangster, A.G., DVD, AHQ, Ottawa
Stethem, A.J.R., CO 202 Base Wksp, Montreal
Stucken, S., ADME Armament Section, DME, AHQ

MAJORS

Ambrose, E.R., Proving Ground Det, VDE, Ottawa
Anderson, R.W., 17 Coy, London
Beddows, J.S., Workshop Section, DME, AHQ
Bethel, V.W., Exchange Officer with REME UK
Bourbonnais, L.A., 202 Base Wksp, Montreal
Bromage, T., OC 6 Coy, Halifax
Brown, H., Workshop Section, DME, AHQ
Bruce, G.W., Ft Knox, Ky, USA
Campbell, D.D., P&T Section, DME, AHQ
Campbell, D.A., VDE, AHQ
Campbell, W.A., Vehicle Section, DME, AHQ
Carscallen, C.N., OC Veh Coy, RCEME School
Cavaghan, G.G., DAAG Pers(RCEME), AHQ
Cram, J.N., RSO Nova Scotia Tech, Halifax
Dalrymple, W.M., OC 16 Coy, Whitehorse
Davis, R.L., OC 228 Wksp, Hagersville
Dolan, M.A., OC 5 Coy, Quebec City
Down, W.A., OC 3 Coy, Kingston
Garnett, J.J., OC 13 Coy, Calgary
Goodfellow, H., CAORE RMC, Kingston
Hagey, H.W., OC 11 Coy, Vancouver
Hodgson, R.H.C., SLO Detroit Arsenals USA
Kaye, F.R., CO 1 Coy, London, Ont
Kennedy, D.T., Tels Section, DME, AHQ
Kirk, G.T., Cdn Army Staff College, Kingston
Kitto, J.S., CO 23 Comp Bde Gp Wksp, Petawawa
Lane, R.C., EME Officers' Course, RCEME School
Libbey, A.M., OC 7 Coy, Coldbrook, NB
Lodge, G.L., RCEME School Staff
MacLean, A.L., Staff RMC, Kingston
MacLean, J.H., DVD, AHQ
McLarnon, J.R., 202 Base Wksp, Montreal
McLaughlin, I.M., MC of S, UK
Moore, A.F., OC 12 Coy, Regina
Murray, K.L., RCEME School Staff
Owens, W.J., MC of S, UK
Platt, P.L.W., OC Prvg Gd Det, VPE, Ottawa
Read, J.H.F., OC 2 Coy, Malton
Reid, M.A., OC 18 Coy, Fort Churchill
Rice, H.A., IQS, AHQ
Robinson, H.M., OC Electronics Coy, RCEME School
Roncarelli, J.A., P&T Section, DME, AHQ
Screaton, L.B., 202 Base Wksp, Montreal
Sherren, J.P., Cdn Army Staff College, Kingston
Smiley, D.C., OC 10 Coy, Winnipeg
Thompson, G.W., CI, RCEME School
Ward, K.R., Workshop Section, DME, AHQ
Whittingham, J.W., OC 205 Base Wksp, Borden

CAPTAINS

Adams, J., Vehicle Section, DME, AHQ
Allen, C.G., OIC 203 Wksp, Quebec City
Auckland, R.A., OIC 200 Base Wksp, Halifax
Banham, H.C., HQ RCEME, Edmonton
Beanlands, H.L., 6 Coy, Halifax
Beddard, W., HQ RCEME, Winnipeg
Beddows, A.S., Retirement Leave
Belcher, G.A., 202 Base Wksp, London
Bourne, J.H., OC 190 LAD
Branston, W.J., 17 Coy, London
Brignell, E.M., 13 Coy, Calgary
Byington, T.H., OIC 207 Wksp, Barriefield
Campbell, J.N.R., 202 Base Wksp, Montreal
Carlyle, D.G., MC of S, UK
Cohen, H.L., U of Mich, Ann Arbor, Mich, USA
Cole, E.W., 191 Cdn Inf Wksp
Collins, K.F., DSD, AHQ
Coombe, J.H., 2 Sec A&T Staff, Toronto
Cooper, F.E., HQ RCEME, Montreal
Coultish, F., 2 Coy, Malton
Coupland, K.L.F., MC of S, UK
Cox, B.B., 23 Comp Bde Gp Wksp, Petawawa
Cumming, D.H., 2 Sec A&T Staff, Toronto
Currie, J.C., MC of S, UK
Cuzner, J.E., Armament Section, DME, AHQ
Demone, F.L., 1 Coy, London
Dewhurst, J.B., HQ RCEME, Oakville
Ellis, W.E. Insp Services of Canada, Long Branch
Erb, H.H.E., P&T Section, DME, AHQ
Esdaile, A.E., Staff The RCEME School
Evans, G.L., 11 Sec A&T Staff, Vancouver

Fendick, R.F., RCEME School Staff
Fulford, R.K., 4 Coy, Montreal
Glover, W.H., RCEME School Staff
Grainger, G.E., OC 210 Wksp, Picton, Ont
Grinham, A.D.L., 204 Base Wksp, London
Hare, E.J., Vehicle Section, DME, AHQ
Harmer, A.G., OIC 221 Wksp, Rivers
Harvey, E.J.O., D Pers (RCEME), AHQ
Hawkins, W.H., RCEME School Staff
Heal, T.R., 10 Sec A&T Staff, Winnipeg
Hendricks, E.F., 191 Cdn Inf Wksp
Hewson, J.M., 202 Base Wksp, Montreal
Hughes, A.W., 202 Base Wksp, Montreal
Ilott, E.C., MC of S, UK
Jeffery, A.J., Workshop Section, DME, AHQ
Jickling, W.S., Proving Gd Det, VPE, Ottawa
Jones, E.G., RCEME School Staff
Kenyon, V.D., 212 Wksp, Shilo
King, H.L.M., 158 LAD
Lane, W. H., OC 211 Base Wksp, Regina
Laver, E.W., Cdn Army Staff College Kingston
Lawrence, C.G., HQ Fort Churchill Admin Unit
Lightfoot, H.B., RCEME School Staff
Logan, R.R., 205 Base Wksp, Borden
Loughridge, J.L., OC 222 Wksp, MacDonald, Man
Lower, E.A., OC 217 Wksp, Esquimalt
MacDonald, R.L., 202 Base Wksp, Montreal
MacHale, D.H., RCEME School Staff
Maitland, A.G.M., 11 Coy, Vancouver
Maybee, R.D., OC 208 Wksp, Ottawa
McClelland, L.E., RCEME School Staff
McManus, H., DVD, AHQ
Miggins, G.P., 215 Wksp, Calgary
Morgan, M.M., OC 213 Wksp, Winnipeg
Morris, R.A., MC of S, UK
Neate, J.H., On retirement leave
Otto, A.B., OC 223 Wksp, Fort Churchill
Palfrey, T.R., 220 Wksp, Fort Nelson
Pinder-Moss, J.N., RCEME School Staff
Provan, C.G., Workshop Section, DME, AHQ
Racicot, C.G., OC 226 Wksp, Lachine, PQ
Rivers, R.C., OC 192 LAD, Special Force
Roberts, A.T., Staff The RCEME School
Roberts, A.N.P., HQ RCEME, Halifax
Robinson, M.R., 2 Coy, Malton
Scarlett, I.C., CADEE, Valcartier, PQ
Sergie, F.J., Staff The RCEME School
Sloan, J.L., Staff The RCEME School
Tait, S.G., OC 219 Wksp, Whitehorse
Thomsen, A.R., Admin Officer, DME, AHQ
Tidy, D.J., MC of S, UK
Treleaven, J.M., 228 Wksp, Hagersville, Ont
Warren, W.G., 3 Coy, Kingston
Webber, L.E., 202 Base Wksp, Montreal
Williams, E.A., 23 Comp Bde Gp Wksp, Petawawa
Wilson, J.A., P&T Section, DME, AHQ

LIEUTENANTS

Alexander, W.D., On Course RCEME School
Ball, G.E., 17 Coy, London
Barnes, E.A., 5 Coy, Quebec City
Beach, R.K., On Course RCEME School
Beneteau, B.A., 207 Wksp, Barriefield
Bishop, E.P., VDE, AHQ, Ottawa
Boughton, J.C., 213 Wksp, Winnipeg
Burton, G.R., On Course RCEME School
Calvert, J.L., On Course RCEME School
Chapman, F.W., On Course RCEME School
Clarabut, J.F., On Course RCEME School
Clerke, B.C., On Course RCEME School
Cuddihey, J.J.E., 205 Base Wksp, Borden
Deibert, B., 203 Wksp, Quebec City
Edmunds, H.P., 204 Base Wksp, London
Fleming, S.H.J., 191 Cdn Inf Wksp
Foskett, T. J., 215 Wksp, Calgary
Fraser, D.H., 200 Base Wksp, Halifax
Girdler, S.A., 16 Coy, Whitehorse
Goodings, B.H., Workshop Section, DME, AHQ
Grant, D.A., On Course RCEME School
Groom, W.J.A., RCEME School Staff
Hamilton, C.J., 4 Coy, Montreal
Hann, H.V., 200 Base Wksp, Halifax
Hill, R.A., 2 Coy, Malton
Hogue, R.H., 4 Coy, Montreal
Holland, L.F., Tels Section, DME, AHQ
House, H.W., 23 Comp Bde Gp Wksp, Petawawa
James, W.M., 207 Wksp, Barriefield
Jamieson, W., RCEME School Staff
Johnson, F.G., 211 Base Wksp, Regina
Joslin, K.R., On Course RCEME School
Kane, J.J., 7 Coy, Coldbrook, NB
Lane, N.G., 17 Coy, London
Leonard, A.C., On Course RCEME School
Libbey, R.W., On Course RCEME School
Love, L.H., No. 1 Radiation & Detection Unit
Lowe, T., 200 Base Wksp, Halifax
MacDonell, A.L.D., CO 159 LAD
MacDonald, J.A., On Course RCEME School
McKaykeenan, R.A., On Course RCEME School
McKinnon, J.A., RCEME School Staff
McNaughton, F.J., 213 Wksp, Winnipeg
Mildon, W.J., DVD, AHQ
Moody, J.W., On Course RCEME School
North, P.H., On Course RCEME School
O'Brien, G.L., 215 Wksp, Calgary
Pfeiffer, H.C.R., On Course RCEME School
Power, W.J., 201 Wksp, Coldbrook, NB
Prediger, P., On Course RCEME School
Protheroe, H.F., Workshop Section, DME, AHQ
Raby, J.R., 214 Wksp, Vancouver
Rodgers, R.E., On Course RCEME School
Ross, D.N., 207 Wksp, Barriefield
Ruscher, M., 23 Comp Bde Gp Wksp, Petawawa
Sandilands, R.H., Tels Section, DME, AHQ
Shaw, R.N., On Course RCEME School
Shaw, W.R., On Course RCEME School
Tevlin, J.J., 2 Coy, Malton
Tuck, P.A., RCEME School Staff
Virtue, W.W., 11 Coy, Vancouver
Vollett, R.W., 2 Coy, Malton
Yarymowich, B., 202 Base Wksp, Montreal

2/LIEUTENANTS

All 2/Lieuts are on course at the RCEME School.

Carruthers, F.R.	Haggins, W.J.N.
Chapman, H.W.	Lelacheur, J.W.
Chess, G.F.H.	MacFarland, H.E.
Clark, G.D.	Martin, R.K.
Crowson, J.S.	Mowbray, D.R.
Daviss, L.A.	Sainsbury, L.A.
Delaney, J.D.	Savage, G.D.
Evans, R.J.	Sheehan, J.O.
Fougere, S.A.	Svab, W.G.
Geary, D.V.	Wright, G.A.

DIED

On 28 Jun 1950, Cpl Harvey K. Macaulay, 213 Workshop, Winnipeg, from injuries received in a vehicle accident.

Cpl Macaulay served throughout World War II, having enlisted with the Fort Garry Horse in Winnipeg in 1939. On his return to Canada he became well known to Reserve Force units through being in charge of the vehicle pool at Minto Armoury.

Harvey was accepted into the Active Force in Oct 1946 and was allocated to 10 Sec A&T Staff where he was employed as corporal storeman. He set up the QM stores for Winnipeg Reserve units and trained personnel in Q administration. At the time of his death he was employed in 213 Workshop.

The deepest sympathy is extended to his family.

On Friday evening, 4 Aug 50, at Petawawa Summer Camp, RCEME lost a soldier and a tradesman who was well known throughout the Corps. He was WOII H. E. R. Preston, better known as 'Harry'.

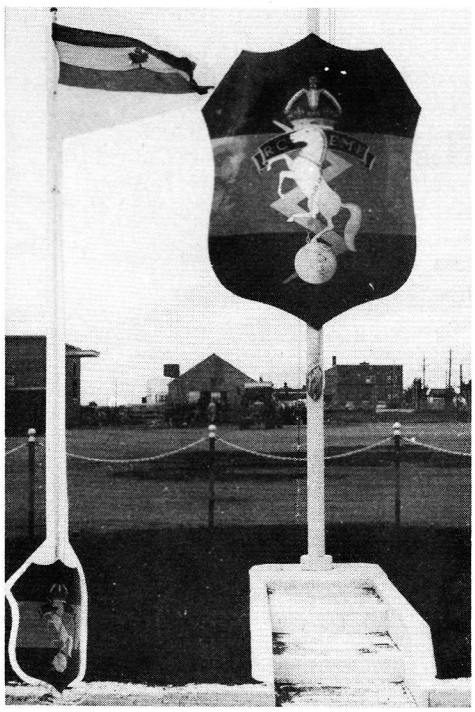
A semi-military funeral was held in Toronto on 7 Aug and interment was in Pine Hills Cemetry. A firing party was provided by HQ Central Command and funeral arrangements were under Major F.J.B. Corbett, GSO II, Central Command, and Major F.R. Kaye, Area EME, Western Ontario Area. The pallbearers were members of the 4th Technical Regiment RCEME, Toronto, the unit to which Harry was attached.

Harry Preston enlisted in No. 2 Army Field Workshop RCOC in Dec 1939. He proceeded overseas with this unit in Jan 40 and was with them as a gun fitter until 1941 when he was sent on course to the Military College of Science where he qualified as an Armament Artificer (Fd). On completion of this course, he served in a number of capacities and on 26 Aug 1943 was promoted to Armament SM WOI in CMHQ.

After four months back in Canada he was posted in Oct 45 to 2/7 Inf Bde Wksp, Cdn Occupational Force, Germany. On return to Canada in 1946 he was posted to the Armament Section of DME, AHQ, Ottawa. On 18 Jul 48 WOII Preston joined 2 Sec A&T Staff at Petawawa Summer Camp and later was attached to HQ RCEME 2 Armoured Division as the A&T Staff WOII. He remained in this capacity until his untimely death this summer.

Deepest sympathy is extended to Mrs Preston and family.

—Capt F. Coultish.



RCEME crest and flag pole erected by 211 Base Workshop RCEME, Regina